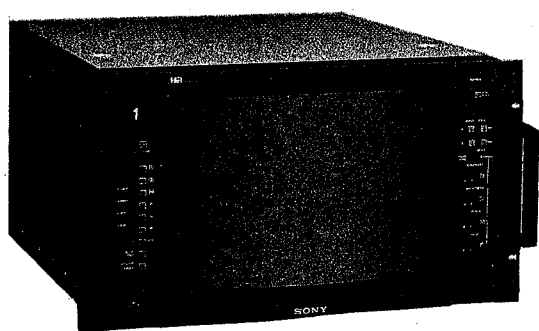


**SONY®**

TRINITRON® COLOR VIDEO MONITOR

# **BVM-1315**

# **BVM-1415P/PM**



TRINITRON

## **OPERATION AND MAINTENANCE MANUAL**

1st Edition

Serial No. 2000001 and Higher (BVM-1315)

Serial No. 2000001 and Higher (BVM-1415P)

(EBU N-10 LEVEL)

Serial No. 2000001 and Higher (BVM-1415PM)

**Warning**—This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

**Important**—To insure that the complete system (including this peripheral) is capable of complying with the FCC requirements, it is recommended that the user make sure that the individual equipment of the complete system has a label with one of the following statements.


"This equipment has been tested with a Class A Computing Device and has been found to comply with Part 15 of FCC rules."

—or—

"This equipment complies with the requirements in Part 15 of FCC rules for a Class A Computing Device."

—or equivalent.

#### **SAFETY-RELATED COMPONENT WARNING!!**

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

#### **CAUTION!!**

DO NOT USE THE EXTERNAL DEGAUSSER TO DEMAGNETIZE THE SCREEN.  
BE SURE TO USE THE DEGAUSS SWITCH ON THE FRONT PANEL.

## **CONFIDENTIAL**

The material contained in this manual consists of information that is the property of Sony Corporation and is intended solely for use by the purchasers of the equipment described in this manual.

Sony Corporation expressly prohibits the duplication of any portion of this manual or the use thereof for any purpose other than the operation or maintenance of the equipment described in this manual without the express written permission of Sony Corporation.

## **CONFIDENTIEL**

Le matériel contenu dans ce manuel consiste en informations qui sont la propriété de Sony Corporation et sont destinées exclusivement à l'usage des acquéreurs de l'équipement décrit dans ce manuel.


Sony Corporation interdit formellement la copie de quelque partie que ce soit de ce manuel ou son emploi pour tout autre but que des opérations ou entretiens de l'équipement à moins d'une permission écrite de Sony Corporation.

## **VERTRAULICH**

Das in dieser Anleitung enthaltene Material besteht aus Informationen, die Eigentum der Sony Corporation sind, und ausschließlich zum Gebrauch durch den Käufer der in dieser Anleitung beschriebenen Ausrüstung bestimmt sind.

Die Sony Corporation untersagt ausdrücklich die Vervielfältigung jeglicher Teile dieser Anleitung oder den Gebrauch derselben für irgendeinen anderen Zweck als die Bedienung oder Wartung der in dieser Anleitung beschriebenen Ausrüstung ohne ausdrückliche schriftliche Erlaubnis der Sony Corporation.

#### **ATTENTION AU COMPOSANT AYANT RAPPORT A LA SÉCURITÉ!!**

LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DU CIRCUIT QUI SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT SONT IDENTIFIÉS DANS CE MANUEL. SUIVRE LES PROCÉDURES QUAND LES COMPOSANTS CRITIQUES SONT REMPLACÉS OU LE FONCTIONNEMENT IMPROPRE EST SUSPECTÉ.

#### **ATTENTION!!**

NE PAS UTILISER DE DÉMAGNÉTISEUR EXTÉRIEUR POUR DÉMAGNÉTISER L'ÉCRAN.  
UTILISER LA TOUCH DE DÉMAGNÉTISATION (DEGAUSS) SUR LE PANNEAU FRONTAL.



# TABLE OF CONTENTS

## 1. OPERATION

1-1.	Outline .....	1-1
1-1-1.	Features .....	1-1
1-1-2.	Options .....	1-2
1-2.	Voltage selection .....	1-3
1-3.	Location and function of controls .....	1-4
1-3-1.	Front panel .....	1-4
1-3-2.	Rear panel .....	1-7
1-3-3.	Sub control panels inside the drawers .....	1-9
1-3-4.	Switches inside the cabinet .....	1-13
1-4.	White balance adjustment .....	1-14
1-5.	Specifications .....	1-15
1-6.	Packing .....	1-17

## 2. DISASSEMBLY

2-1.	Cabinet Removal and the Side Panels .....	2-1
2-2.	Bezel Assembly Removal .....	2-1
2-3.	Bottom Cover Removal .....	2-2
2-4.	Check of C Board .....	2-2
2-5.	BK Block Removal .....	2-3
2-6.	Check of BK Board .....	2-3
2-7.	Check of BA, BB, BC, BD, BG, BH, BI and BJ Boards .....	2-4
2-8.	CG Board Removal .....	2-4
2-9.	EA Board Removal .....	2-5
2-10.	Flyback Transformer and High Voltage Block Removal .....	2-5
2-11.	QA, W and V Boards Removal .....	2-6
2-12.	Picture Tube Removal .....	2-6
2-13.	Power Block Assembly Removal .....	2-7

## 3. CIRCUIT DESCRIPTION

3-1.	QA, QB, BA Boards .....	3-1
3-2.	BG Board .....	3-3
3-3.	BH Board .....	3-5
3-4.	BI Board .....	3-7
3-5.	Sync Processor, Pulse Generator (BJ Board) .....	3-9
3-6.	BK Board .....	3-13
3-7.	Beam Control Circuit (BI, BK Boards) .....	3-15
3-8.	NTSC Comb Filter (BB Board) .....	3-17
3-9.	NTSC Demodulator, Y Trap Circuit (BC Board) .....	3-19
3-10.	PAL Demodulator, Y Trap Circuit (BD Board) .....	3-21
3-11.	PAL-M Demodulator, Y Trap Circuit (BM Board) .....	3-23
3-12.	Vertical Deflection Output Circuit Convergence Output Circuit (EB Board) .....	3-25
3-13.	Power Supply Circuit (GA, GB Boards) .....	3-27
3-14.	D Board .....	3-29
3-15.	Horizontal Deflection Output Circuit and High Voltage Regulator Circuit (EA Block) .....	3-31

## 4. ADJUSTMENTS

4-1.	Internal View .....	4-1
4-2.	Circuit Boards Location .....	4-2
4-3.	Quick Reference .....	4-3
4-4.	Sub Control Panel Location .....	4-4
4-5.	Setup Adjustment in Case of Picture Tube Replacement .....	4-5
4-6.	Safety Related Adjustments .....	4-11
4-7.	Circuit Adjustments .....	4-17

## 5. DIAGRAMS

5-1.	Block Diagram .....	5-1
5-2.	Frame Wiring Diagram .....	5-5
5-3.	Mounting and Schematic Diagrams .....	5-9
	BA Board .....	5-11
	BB Board .....	5-16
	BC Board .....	5-21
	BD or BM Boards .....	5-26
	BG Board .....	5-31
	BH Board .....	5-36
	BI Board .....	5-41
	BJ Board .....	5-46
	BK Board .....	5-51
	D Board .....	5-56
	EA, EB, C and P Boards .....	5-62
	GA and GB Boards .....	5-68
	HA, HB, HC, HG, HH, XB and Y Boards .....	5-74
	GC, QA, QB, V and W Boards .....	5-79
	TB Board .....	5-83
	Z Board .....	5-87
5-4.	Semiconductors .....	5-89

## 6. EXPLODED VIEWS

6-1.	Bezel .....	6-1
6-2.	PICTURE TUBE .....	6-2
6-3.	Chassis .....	6-3
6-4.	Signal Block .....	6-4
6-5.	Drawer Block (Right) .....	6-5
6-6.	Power Block .....	6-7

## 7. ELECTRICAL PARTS LIST..... 7-1

# SECTION 1

## OPERATION

### 1-1. OUTLINE

#### 1-1-1. Features

The BVM-1315, BVM-1415P/PM is a color video monitor designed for critical evaluation of video signals in broadcasting stations and production houses.

This manual covers the BVM-1315 (USA model), BVM-1415P (European model) and BVM-1415PM (PAL-M model).

##### **High resolution picture**

The Super Fine Pitch Trinitron picture tube (0.25 mm aperture grille) gives a high resolution, high contrast picture. Horizontal resolution is more than 600 TV lines at the center of the picture.

##### **Stabilized color temperature**

The newly-developed beam control circuit maintains the color temperature constant for a long period of time.

##### **Split screen for precise picture confirmation**

The lower half of the picture can be displayed in monochrome mode while the upper half is displayed in color mode. This facilitates confirmation of the luminance and chrominance channels, evaluation of the noise in chrominance or luminance channel, etc.

##### **Blue only mode for precise evaluation of noise component**

In blue only mode, an apparent monochrome display is obtained with all three control grids driven with a blue signal. This facilitates color saturation and phase adjustments and observation of VTR noise.

##### **Other features**

- Three color standards selectable using the optional plug-in type decoder boards
- Picture set-up function facilitating adjustment of the monitor reference black for the black level of an incoming video signal
- Pulse cross function for simultaneous checking of the horizontal and vertical sync signals or VITS (Vertical Interval Test Signal)
- Built-in crosshatch and 100% white signal generators facilitating monitor set-up
- VITC (Vertical Interval Time Code) display possible using the optional VITC reader board
- Pull-out drawer containing white balance, preset controls, and other function selectors.
- Auto and manual degaussing
- Three-position AFC switch
- Overdrive protection circuit to protect against picture tube damage
- EIA standard 19-inch rack mounting possible using the optional rack mount kit

## 1-1-2. Options

Model No.	Product name	Board name	Use
BKM-1410	NTSC ADAPTOR	BC	Decoder board for NTSC color system
BKM-1411	NTSC COMB ADAPTOR	BB	Comb filter board for NTSC color system
BKM-1420	PAL ADAPTOR	BD	Decoder board for PAL color system
BKM-1421	PAL-M ADAPTOR	BM	Decoder board for PAL-M color system
BKM-1430	SECAM ADAPTOR	BE	Decoder board for SECAM color system
BKM-1440	RGB/COMPONENT ADAPTOR	BF	Decoder outputs of RGB or component signals
BKM-1460	VITC ADAPTOR	BL	Reader of Vertical Interval Time Code
BKM-1470	SAFE AREA DISPLAY	BQ	For displaying the safe area
BKM-1480	BLACK LEVEL SIGNAL GENERATOR	BS	For generating black level signals
BKM-1450	AUTO SET-UP ADAPTOR	BN BO	Auto chroma/phase adjustment, auto white balance adjustment, selection of color temperature
BKM-1400	RACK MOUNT KIT	—	For EIA standard 19 inch rack mounting

### Combinations of the optional boards

The BVM-1315 is supplied with the BB circuit board (NTSC COMB ADAPTOR) and BC circuit board (NTSC ADAPTOR).

The BVM-1415P is supplied with the BD circuit board (PAL ADAPTOR).

The BVM-1415PM is supplied with the BM circuit board (PAL-M ADAPTOR).

You can choose up to five optional B boards above including the supplied circuit board(s). The combinations of the B boards are limited depending on which boards can be accepted for each board compartment.

### Notes

- Insert BA, BG, BH, BI and BJ boards into their respective compartments of the same name.
- Do not leave B5 compartment blank. Insert one of the boards specified in the above table. If no board is inserted, the luminance/chrominance or luminance channel will not be activated in composite signal mode.
- Do not insert BD (PAL DECODER) and BM (PAL-M DECODER) boards simultaneously. This causes malfunction of the monitor.

For details on installation, refer to the operation and maintenance manual of the optional board.

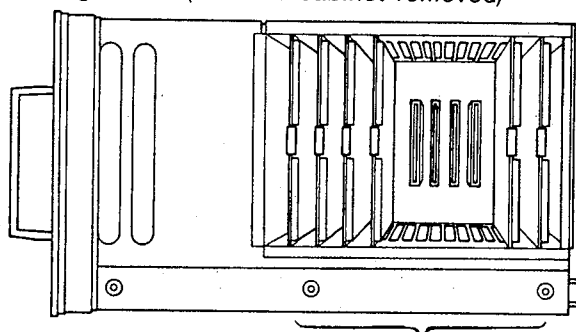
Board name (Function)	Compartment name				
	B5	B4	B3	B2	B1
BB (NTSC COMB FILTER)	X	O	O	O	O
BC (NTSC DECODER)	O	O	O	O	O
BD (PAL DECODER)	O	O	O	O	O
BE (SECAM DECODER)	O	O	O	O	O
BM (PAL-M DECODER)	O	O	O	O	O
BF (RGB/COMPONENT)	X	X	O	X	X
BL (VITC)	X	X	X	O	X
BQ (SAFE AREA DISPLAY)	X	△	X	O	X
BS (BLACK LEVEL SIGNAL GENERATOR)	O	O	O	O	O
BN (AUTO SET-UP BO ADAPTOR)	O	O	X	X	X

O: acceptable

X: not acceptable

△: acceptable but the switch or control settings on the sub control panels cannot control the display.

Right view (with the cabinet removed)



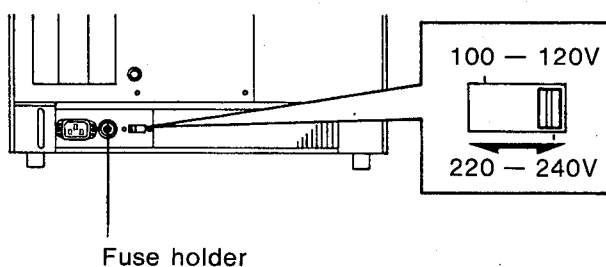
Board compartments

## 1-2. VOLTAGE SELECTION

The monitor operates on either 220 – 240 or 100 – 120V AC. Before connecting the unit to an AC outlet, make sure the voltage selector at the rear of the unit is set to the local power line voltage. Change the position of the selector if necessary.

The factory preset operating voltage of each model is as follows.

BVM-1315, 1415PM	100–120V
BVM-1415P	220–240V

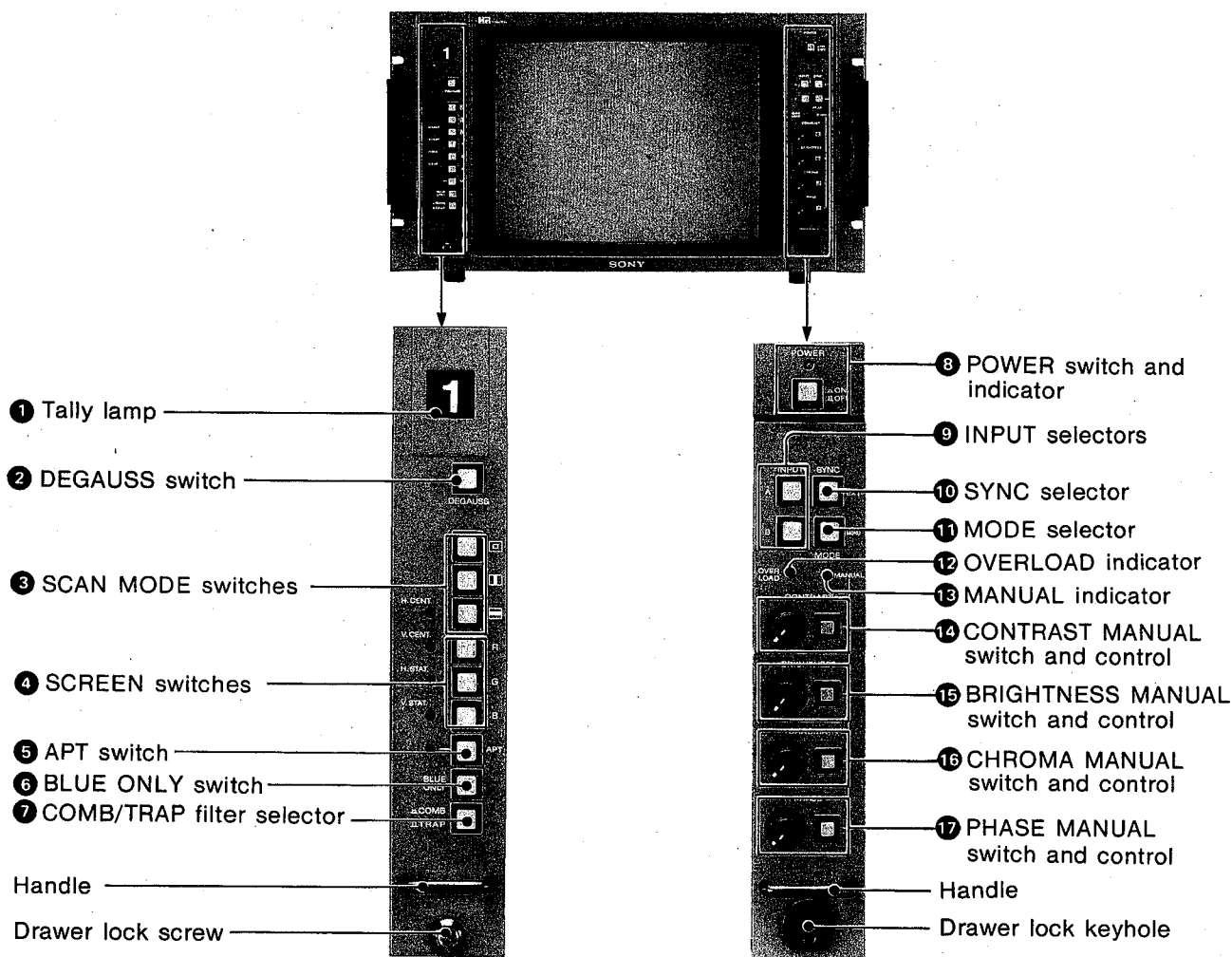


### Note

Use a T2A/250V fuse for 220 – 240V AC operation, and a 4A/125V fuse for 100 – 120V AC operation. The appropriate fuse is installed at the factory in accordance with the voltage presetting. If you change the voltage selector setting, replace the fuse with an appropriate one.

## 1-3. LOCATION AND FUNCTION OF CONTROLS

### 1-3-1. Front Panel



#### ① Tally lamp

Insert one of the tally number plates 1 to 5 (supplied) when the drawer is open.

The lamp lights when No. 3 and No.8 pins of the REMOTE connector on the rear panel are short-circuited.

#### ② DEGAUSS switch

When the power is turned on, automatic degaussing is activated.

To demagnetize the screen manually, press this switch momentarily with the power turned on.

Wait for 5 minutes or more before activating degaussing again.

#### ③ SCAN MODE switches

☐ (underscan): Depress this switch for under-scanning. The display size is reduced by approximately 3% so that four corners of the raster are visible.

☐ (horizontal delay): Depress this switch to observe the horizontal sync signal. The picture is shifted horizontally and the horizontal sync signal is displayed in the left quarter of the screen. Picture brightness is automatically increased for easy observation.

☐ (vertical delay): Depress this switch to observe the vertical sync signal. The picture is shifted vertically and the vertical sync signal is displayed near the center of the screen. Picture brightness is automatically increased for easy observation.

• A pulse cross is displayed by depressing both the ☐ and ☐ switches.

• To resume normal scanning, press to release the depressed switches.

**4 SCREEN switches**

The R, G and B switches turn the red, green and blue beams respectively on and off. To turn off the beam, depress the switch. To turn it on again, press to release it.

**5 APT (aperture) switch**

Normally keep this switch released. A flat frequency response is obtained.

For aperture correction, depress this switch and adjust the APT control **22**. The boost frequency, 4.5 MHz or 6.5 MHz, can be selected with the S1 switch on the BG board.

At the 4.5 MHz position, the frequency response can be adjusted continuously with up to 6 dB boost at 4.5 MHz for subjective enhancement of the displayed picture.

At the 6.5 MHz position, the frequency response can be adjusted continuously with up to 6 dB boost at 6.5 MHz for compensation of the aperture loss of the CRT.

**6 BLUE ONLY switch**

Normally keep this switch released. Depress this switch to turn off the red and green signals. A blue signal is displayed as an apparent monochrome picture on the screen. This facilitates CHROMA and PHASE control adjustments and observation of VTR noise.

**7 COMB/TRAP filter selector**

This selector is effective for the NTSC color system only, with the BKM-1410 NTSC adaptor and the BKM-1411 NTSC comb adaptor installed.

Depress the selector to activate the comb filter (☐ COMB). Press to release it for the trap filter (☐ TRAP).

When the BKM-1411 NTSC comb adaptor is not installed, or when a color system other than NTSC is selected, the trap filter is always activated regardless of this selector setting.

**8 POWER switch and indicator**

Depress this switch to turn on the power. The POWER indicator will light. To turn the power off, press the switch again.

**9 INPUT selectors**

Select the input signal.

**A:** To monitor the signals connected to the VIDEO A INPUT connector, depress this selector.

**B:** To monitor the signals connected to the VIDEO B INPUT connector, depress this selector and press the INPUT SELECT "B" button inside the right drawer.

For details on input selection, refer to "INPUT SELECT buttons" on page 1-11.

**10 SYNC selector**

Normally keep this selector released (INT). The monitor operates on the sync signal from the displayed composite video signal. To operate the monitor on an external sync signal supplied from the EXT SYNC connector on the rear panel, depress the selector (EXT).

**11 MODE selector**

Normally keep this selector released (AUTO). Color or monochrome mode is automatically selected according to the presence or absence of color burst. Depress the selector (MONO) to display the monochrome picture.

**12 OVERLOAD indicator**

This indicator lights to warn of overdrive of the CRT.

**13 MANUAL indicator**

This indicator lights when any of the MANUAL switches **14** through **17** is depressed.

**14 CONTRAST MANUAL switch and control**

When this switch is in the released position, the contrast preset with the PRESET CONTRAST control inside the right drawer is obtained. To adjust the contrast manually, depress this switch and turn this control.

**15 BRIGHTNESS MANUAL switch and control**

When this switch is in the released position, the brightness preset with the PRESET BRIGHTNESS control inside the right drawer is obtained. To adjust the brightness manually, depress this switch and turn this control.

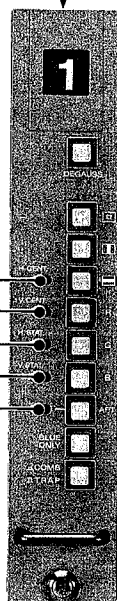
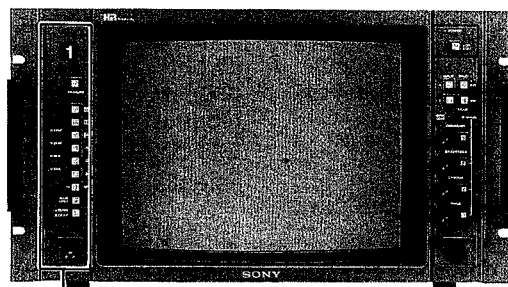
**16 CHROMA MANUAL switch and control**

When this switch is in the released position, the color saturation preset with the PRESET CHROMA control inside the right drawer is obtained. To adjust the color saturation manually, depress this switch and turn this control.

**17 PHASE MANUAL switch and control**

When this switch is in the released position, the subcarrier phase preset with the PRESET PHASE control inside the right drawer is obtained. To adjust the subcarrier phase manually, depress this switch and turn this control.

(This control is not effective when the COLOR STANDARD PAL button is pressed and the PAL D/S selector is set to D, or when the COLOR STANDARD SECAM button is pressed.)

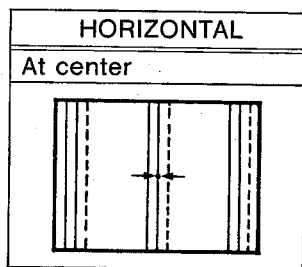


- 18 H.CENT control
- 19 V.CENT control
- 20 H.STAT control
- 21 V.STAT control
- 22 APT control

**18 H.CENT (horizontal centering) control**  
Adjusts the horizontal position of the picture.

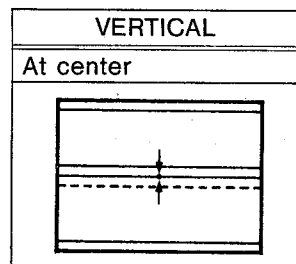
**19 V.CENT (vertical centering) control**  
Adjusts the vertical position of the picture.

**20 H.STAT (horizontal static) control**  
Adjusts the convergence of red and green in the horizontal direction at the screen center. Adjust the convergence of corresponding portion of the screen as follows:



When adjusting the convergence, observe the portion of the screen indicated by the  $\rightarrow \bullet \leftarrow$  mark in the illustrations. The red and blue beams move symmetrically to the green beam.

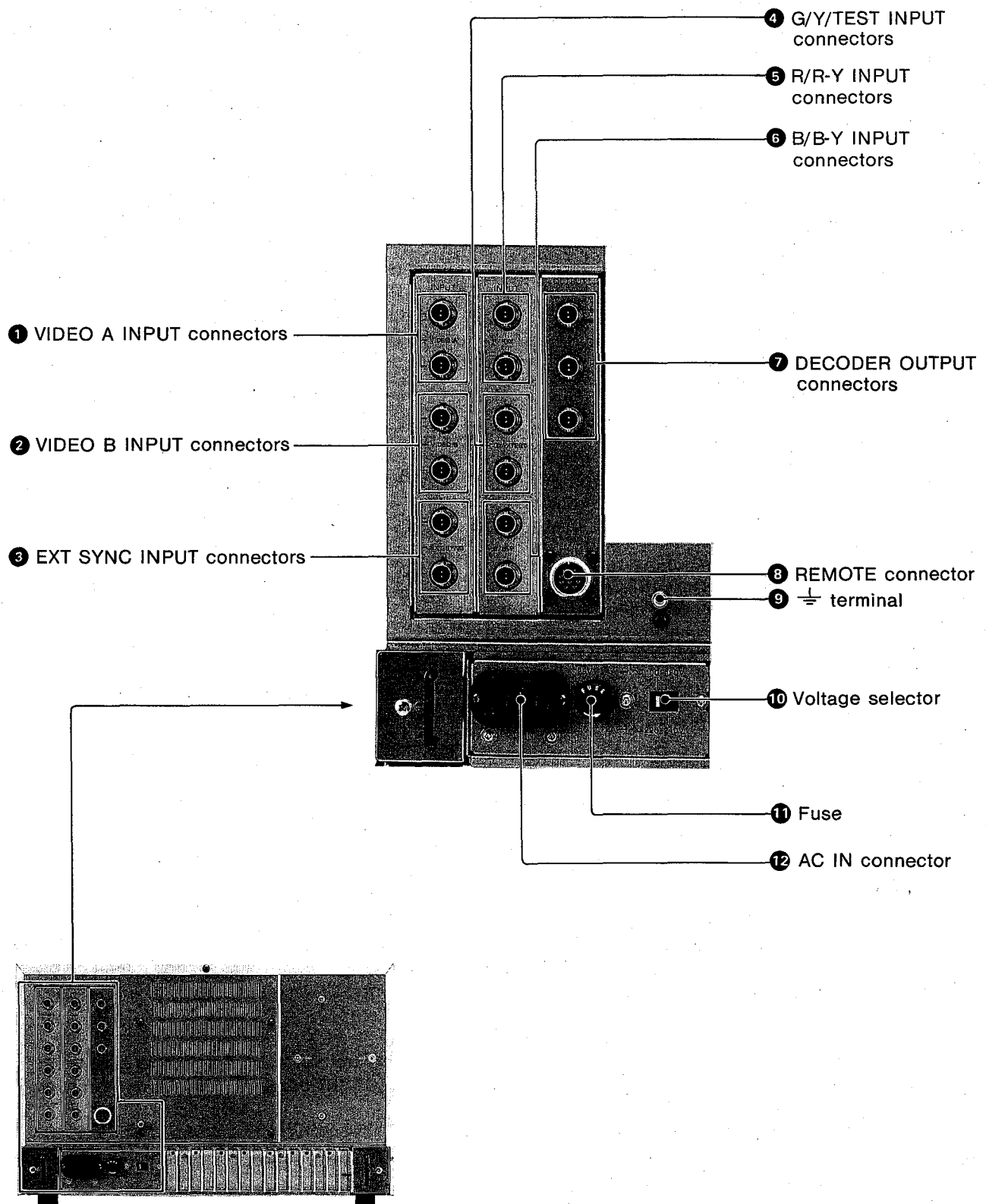
**21 V.STAT (vertical static) control**  
Adjusts the convergence of red and green in the vertical direction at the screen center. Adjust the convergence of corresponding portion of the screen as follows:



When adjusting the convergence, observe the portion of the screen indicated by the  $\updownarrow$  mark in the illustrations. The red and blue beams move symmetrically to the green beam.

**22 APT (aperture) control**  
Adjust the frequency response when the APT switch **5** on the front panel is depressed.

## 1-3-2. Rear Panel





**1 VIDEO A INPUT connectors (BNC)**

**2 VIDEO B INPUT connectors (BNC)**

Accept video signals. Use one connector for input and the other for loop-through output.

When the loop-through output is not used, attach a 75-ohm terminator.

**3 EXT SYNC INPUT (external sync input) connectors (BNC)**

Accept sync signals.

Use one connector for input and the other for loop-through output.

When the loop-through output is not used, attach a 75-ohm terminator.

**4 G/Y/TEST INPUT connectors (BNC)**

**5 R/R-Y INPUT connectors (BNC)**

**6 B/B-Y INPUT connectors (BNC)**

Input an RGB, component (Y, R-Y, B-Y) or test signal. The input signal can be selected with the INPUT SELECT buttons on the sub control panel. Use one connector for input and the other for loop-through output. When the loop-through output is not used, attach a 75-ohm terminator.

**7 DECODER OUTPUT connectors (BNC)**

These connectors provide RGB or component (Y, R-Y, B-Y) outputs decoded from the signals displayed on the screen, only when the BKM-1440 (RGB/component adaptor) is installed.

The RGB or component outputs are selected with the S1 selector on the BF board of the BKM-1440 kit.

**Quick reference for output selection**

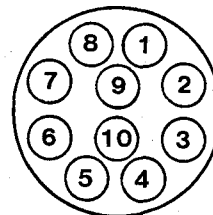
Output signal	Component	RGB
<b>Operation</b>		
S1 selector on BF board	Upper position	Lower position
Input signal	Encoded VIDEO A, VIDEO B, TEST or component	
Output connectors	DECODER OUTPUT (R/R-Y, G/Y, B/B-Y)	

**Notes**

- The DECODER OUTPUT connectors do not provide the correct RGB outputs from the displayed RGB signals. For RGB outputs, use the loop-through outputs of the R/G/B input connectors.
- The outputs from non-composite signals are also non-composite. Supply sync signals from the EXT SYNC INPUT connector if required.
- The output signals are affected by the CHROMA, PHASE and APT controls and MATRIX switch.
- The color killer is not activated for output signals.

**8 REMOTE connector (10-pin)**

Use the supplied 10-pin connector.



To enter remote control mode, short-circuit pin No. 5 with pin No. 8.

The relationship between the function and pin connections in remote control mode are shown below.

Function			Pin No.						
INPUT*	SYNC*	MODE*	1	2	3	4	5	6	7
VIDEO A	INT	AUTO	O	O	—	O	S	—	—
		MONO	S	O	—	O	S	—	—
	EXT	AUTO	O	O	—	S	S	—	—
		MONO	S	O	—	S	S	—	—
VIDEO B	INT	AUTO	O	S	—	O	S	—	—
		MONO	S	S	—	O	S	—	—
	EXT	AUTO	O	S	—	S	S	—	—
		MONO	S	S	—	S	S	—	—
VITC OFF**			—	—	—	—	—	S	—
VITC HOLD**			—	—	—	—	—	O	S
TALLY ON			—	—	S	—	—	—	—

S: Short-circuit with pin No. 8.

O: Open

—: Either S or O.

\* Remote control operations have priority over the MODE, INPUT and SYNC selectors on the front panel.

\*\* To remotely control the VITC display, first set the VITC switch inside the right drawer to ON and then short-circuit pin 6 or 7 with pin 8. (For VITC display, the optional BKM-1460 is required.)

**Note**

For remote control operations, be sure to depress the INPUT SELECT "B" button inside the right drawer.

**9 Ground (—) terminal**

Connect to the system ground, if necessary.

**10 Voltage selector**

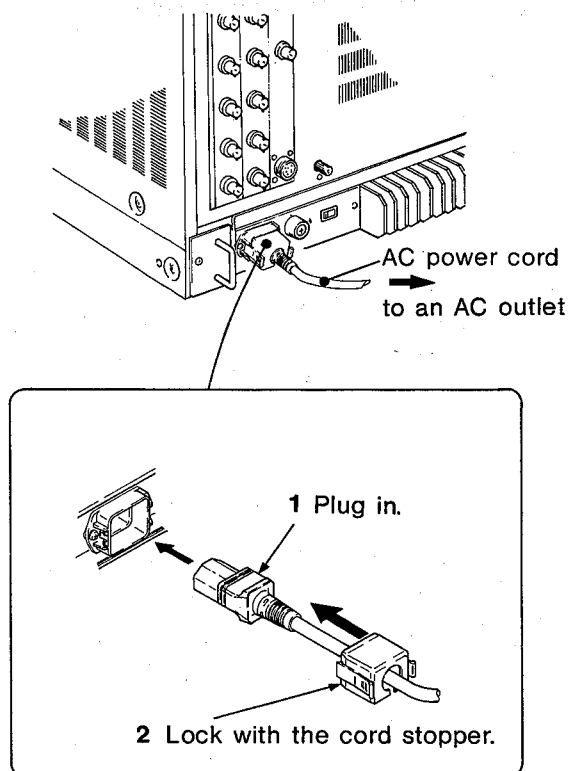
Set to the local power line voltage, 220 – 240V AC or 100 – 120V AC.

**11 Fuse**

Use a T2A fuse for operation on 220 – 240V AC, or a 4A fuse for operation on 100 – 120V AC.

**12 AC IN connector**

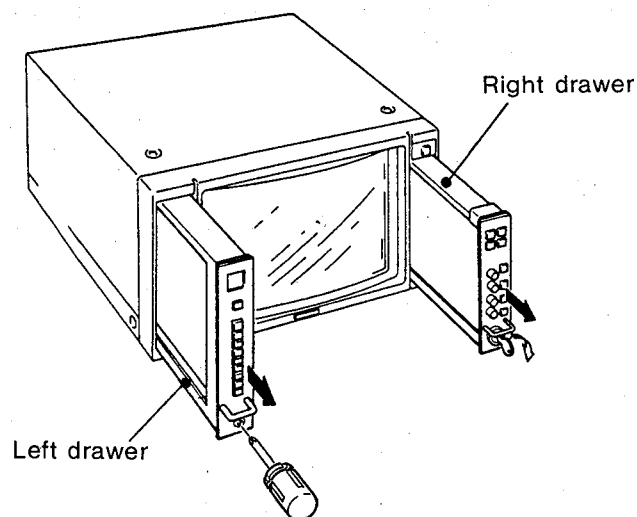
Connect the supplied AC power cord here and secure it with the supplied cord stopper.

**1-3-3. Sub Control Panels inside the Drawers****The right drawer**

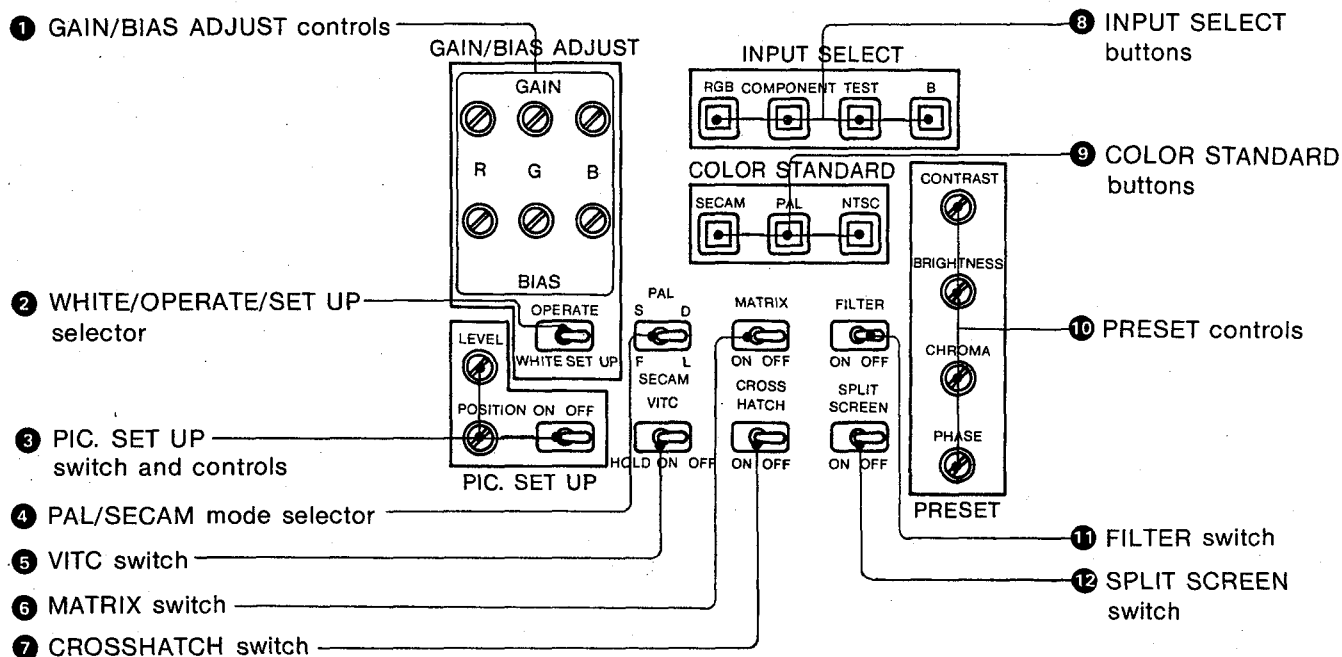
Insert the supplied key into the keyhole of the drawer lock, turn it 90° clockwise and pull the drawer out.

**The left drawer**

Unlock the lock-screw using a screwdriver and pull the drawer out.



- Adjust the controls on the sub control panel when the monitor is fully warmed up. Warm-up time will be at least 30 minutes after the power has been turned on.
- Adjust the control using the supplied screwdriver.

**Inside the right drawer****HB board** (Function selection and white balance adjustment section)**1 GAIN/BIAS ADJUST controls**

Used for white balance adjustment.

GAIN and BIAS controls are provided for the R (red), G (green) and B (blue) screens.

**BIAS:** Set the WHITE/OPERATE/SET UP selector to SET UP and adjust the white balance and brightness of the screen at the lowlight with these controls.

**GAIN:** Set the WHITE/OPERATE/SET UP selector to WHITE and adjust the white balance and contrast of the screen at the highlight with these controls. For details on the white balance adjustment, refer to "1-4. WHITE BALANCE ADJUSTMENT" on page 1-14.

**2 WHITE/OPERATE/SET UP selector**

**OPERATE:** Normally set to this position for normal monitoring.

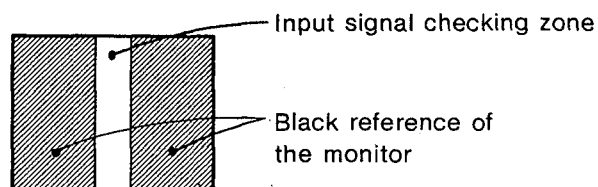
**WHITE:** When adjusting the white balance at the highlight, set to this position. Internal 100% white signal is displayed on the screen.

**SET UP:** When adjusting the white balance at the lowlight, set to this position. A horizontal white bar of approximately 1/3 the screen height is displayed.

**3 PIC. SET UP (picture set up) switch and controls**

Used to match the black reference of the monitor with the black level of the input signal.

**ON/OFF switch:** When this switch is set to ON, a vertical picture band and the black reference of the monitor are displayed on the screen for easy level comparison.



**POSITION control:** Move the position of the picture band horizontally so that the black signal of the picture is located next to the black reference area.

**LEVEL control:** Adjust this control to match the brightness of the black reference area with that of the input black signal.

**4 PAL/SECAM mode selector**

This selector functions as the PAL D/S selector for PAL color system, and as the SECAM F/L selector for SECAM color system.

**PAL D/S selector:** Selects the demodulation mode of the PAL system, D (deluxe) or S (simple). Normally set to D.

**SECAM F/L selector:** Selects the ID signal of the SECAM system, L (line) or F (field). Normally set to L.

**5 VITC (Vertical Interval Time Code) switch**

This switch functions only when the optional BKM-1460 (VITC ADAPTOR) is installed.

**ON:** Set to this position to display the VITC.

**OFF:** To turn off the VITC display.

**HOLD:** To hold the VITC figure, press the switch momentarily to this position. To run the VITC again, press the switch to this position again.

**6 MATRIX switch**

Normally set this switch to OFF. Set to ON to activate the matrix circuit so that the chromaticity of the displayed picture more closely approximates to that of "true" NTSC phosphors.

**7 CROSSHATCH switch**

Set to ON to display the internal crosshatch pattern for adjusting convergence, etc.

The crosshatch pattern is synchronized to the selected composite sync signal.

**8 INPUT SELECT buttons**

To monitor one of the following four input signals, depress the INPUT B selector on the front panel and press the appropriate button.

**RGB:** To monitor the R/G/B signals connected to the R/R-Y, G/Y/TEST and B/B-Y connectors

**COMPONENT:** To monitor the component (R-Y, Y and B-Y) signals connected to the R/R-Y, G/Y/TEST and B/B-Y connectors

**TEST:** To monitor the composite video signals connected to the G/Y/TEST connector

**B:** To monitor the composite video signals connected to the VIDEO B INPUT connector

**Quick reference for input selection**

Input signal Operation	Encoded video			Component	RGB
	VIDEO A	VIDEO B	TEST		
INPUT selectors (front panel)	A	B	B	B	B
INPUT SELECT buttons (right drawer)		B	TEST	COMPONENT	RGB
INPUT connectors	VIDEO A	VIDEO B	G/Y/TEST	R/R-Y, G/Y/TEST, B/B-Y	R/R-Y, G/Y/TEST, B/B-Y

**9 COLOR STANDARD buttons**

Select the color standard of the input picture. For displaying the picture of each color standard, the appropriate decoder board (optional) should be installed. See page 1-2.

**SECAM:** For SECAM standard

**PAL:** For PAL or PAL-M standard

**NTSC:** For NTSC standard

**Note**

If the decoder board for the selected color system is not installed:

- The picture does not appear on the screen when the FILTER switch ⑪ is set to ON.
- The picture is displayed in monochrome mode when the FILTER switch is set to OFF.

**10 PRESET controls**

Adjust the preset levels.

**CONTRAST:** Preset the picture contrast level.

**BRIGHTNESS:** Preset the picture brightness level.

**CHROMA:** Preset the color saturation level.

**PHASE:** Preset the subcarrier phase.

**11 FILTER switch**

This switch functions only when the MODE selector on the front panel is set to MONO.

Normally set to ON to activate the comb or trap filter. Set to OFF to deactivate the filter for a wider frequency range.

- When the MODE selector is set to AUTO, the filter is always activated for color signals regardless of this switch setting.

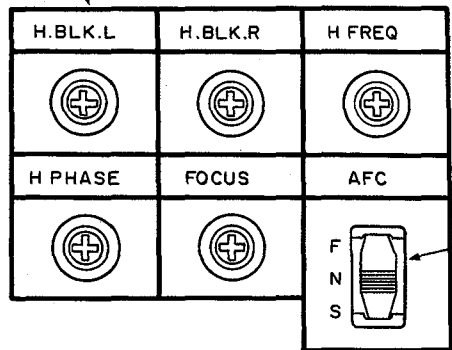
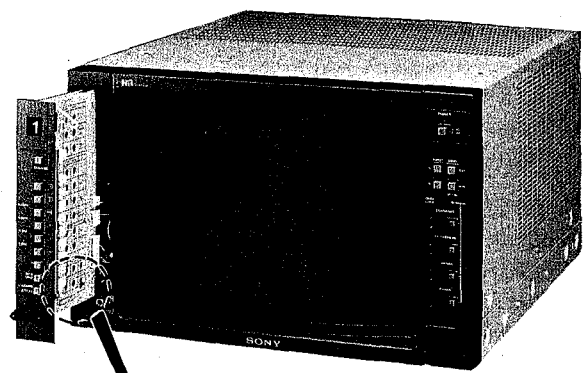
**12 SPLIT SCREEN switch**

Normally set to OFF. When this switch is set to ON, the lower half of the picture is displayed in monochrome mode.

Inside the left drawer

DA board

In DA board, the explanation is limited to the AFC selector.

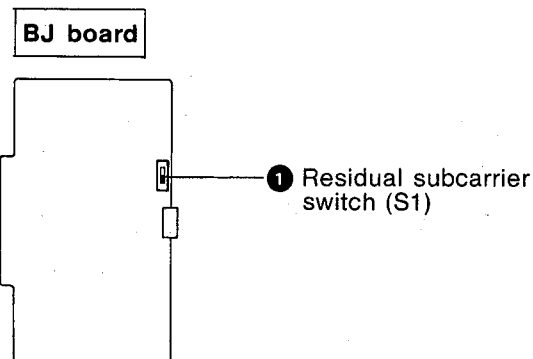


① AFC selector

- ① **AFC (automatic frequency control) selector**  
 Selects the AFC time constant.
- F (fast):** This mode is fast enough to correct for VTR jitter. Set to this position to obtain a stable playback picture from a VTR.
- N (normal):** Normally set to this position.
- S (slow):** This mode is slow enough to display the time base instability introduced by mechanical jitter, in the VTR playback signal.

## 1-3-4. Switches inside the Cabinet

Remove the cabinet, referring to Section 2.

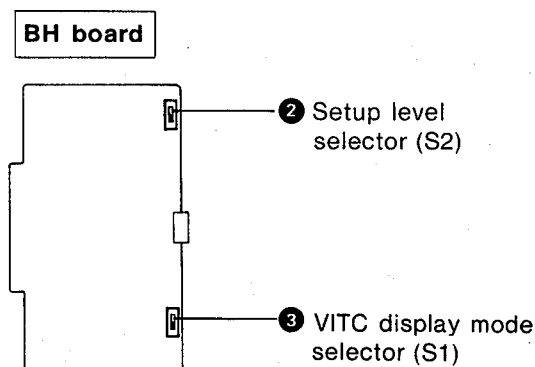


### 1 Residual subcarrier switch (S1)

This switch is factory-preset to the lower position (OFF).

Normally there will be no residual subcarrier in input video signals. However, if a residual subcarrier is present, this may affect the display.

Set this switch to the upper position (ON) to check if a residual subcarrier is present. If it is present in the incoming signal, color shift appears in the picture.



### 2 Setup level selector (S2)

Select the setup level.

**0 IRE:** Setup level is 0%.

**AUTO:** Factory-preset position. Setup level is 0% when the field frequency of the input signal is 50 Hz, and 7.5% when the field frequency is 60 Hz.

**7.5 IRE:** Setup level is 7.5%.

The setup level can be adjusted with the controls on the BH board: 0% level with the RV1 control, and 7.5% level with the RV2 control in the range from -2.5% through +12.5%.

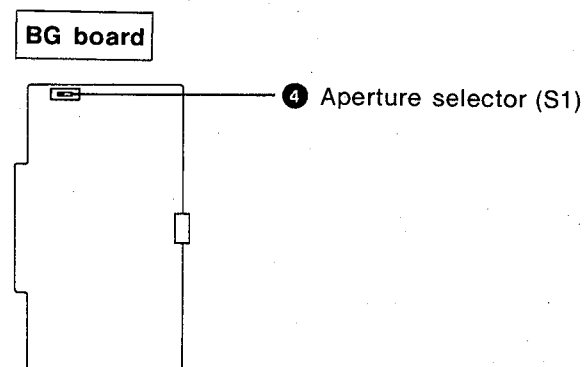
### 3 VITC display mode selector (S1)

Used to invert the character and background colors.

**Upper position:** Factory-preset position. The VITC is displayed in white characters with black background.

**Lower position:** The VITC is displayed in black characters with white background.

For details, refer to the operation and maintenance manual of the BKM-1460 (VITC ADAPTOR).



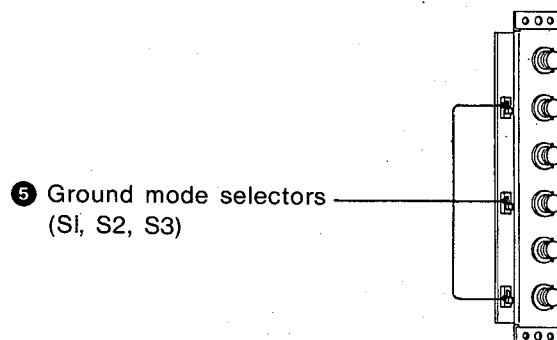
### 4 Aperture selector (S1)

Selects the boost frequency, 4.5 MHz or 6.5 MHz, for aperture correction. This selector is factory-preset to 4.5 MHz.

## QA and QB boards

The QA and QB boards are located behind the INPUT connector panels.

Remove the INPUT connector panels, referring to Section 2.



### 5 Ground mode selectors (S1, S2, S3)

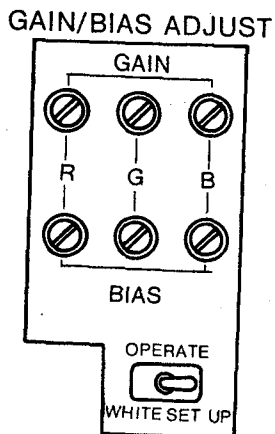
Three selectors are provided for each VIDEO A, VIDEO B and EXT SYNC connectors (QA board), or for each R/R-Y, G/Y/TEST and B/B-Y connectors (QB board).

**S (non-floating):** Factory-preset position. Normally keep the selectors at this position.

**F (floating):** When there is hum in the input signal, set to this position. Common mode noises will be rejected.

## 1-4. WHITE BALANCE ADJUSTMENT

Use the WHITE/OPERATE/SET UP selector and GAIN/BIAS ADJUST controls on the HB board inside the right drawer. During adjustment, turn the red, green and blue beams on and off with the SCREEN switches on the front panel, as required.



- 1 Display a test signal on the screen.
- 2 Set the WHITE/OPERATE/SET UP selector to SET UP.
- 3 Adjust the white balance at the lowlight with the BIAS controls.
- 4 Set the WHITE/OPERATE/SET UP selector to WHITE.
- 5 Adjust the white balance at the highlight with the GAIN controls.
- 6 After adjustment, set the WHITE/OPERATE/SET UP selector to OPERATE.

### Note

For white balance adjustment using a color analyzer or equivalent, see Section 2.

## 1. OPERATION

1-15



**Linearity**

Within a central area bounded by a circle whose diameter equals the picture height, within 1% of the picture height, out of area 2%

**Color temperature**

D6500, adjustable to other color temperatures

**Nominal chromaticity coordinates****BVM-1315**

SMPTE C phosphor

	x	y
Red	0.630	0.340
Green	0.310	0.595
Blue	0.155	0.070

**BVM-1415P, BVM-1415PM**

EBU standard phosphor

	x	y
Red	0.64	0.33
Green	0.29	0.60
Blue	0.15	0.06

**Convergence error**

Central area: Less than 0.5 mm

**Preset contrast**

Periphery: Less than 1.0 mm  
40 fL at peak white of standard 1 Vp-p signal

**Raster size stability**

Less than 1% picture height,  
0% to 100% APL at 40 fL  
peak luminance

**Scan delay**

Horizontal: Approx. 1/4 line  
Vertical: Approx. 1/2 field

**Resolution**

More than 600 TV lines  
(center, at 40 fL luminance)

**Environment****Operating temperature**

0 to 40°C (32 to 104°F)

**Optimum temperature range**

20 to 30°C (68 to 86°F)

**Humidity**

0 to 90%

**Altitude**

Approx. 3,050 m (10,000 feet)

**General****Picture tube protection**

EHT (Extremely High Tension) is shut off in the event of scan failure.

**Warm up**

30 minutes to meet specifications

**Anode voltage**

Properly adjusted HV 25 kV at zero beam current

**Power consumption**

Typical: 125W  
Maximum: 155W

**Power requirements**

220 – 240 or 100 – 120V AC  
±10%, adjustable, 50/60 Hz

**Dimensions**

426 × 281.5 × 489 mm (w/h/d)  
(16 7/8 × 11 1/8 × 19 3/8 inches)  
incl. projecting parts and controls

**Weight**

28.5 kg (61 lb 12 oz)

**Supplied accessories**

AC power cord (1)

Cord stopper (1)

Screwdriver (for adjustment) (1)

Drawer keys (2)

Extension board (1)

10-pin connector (1)

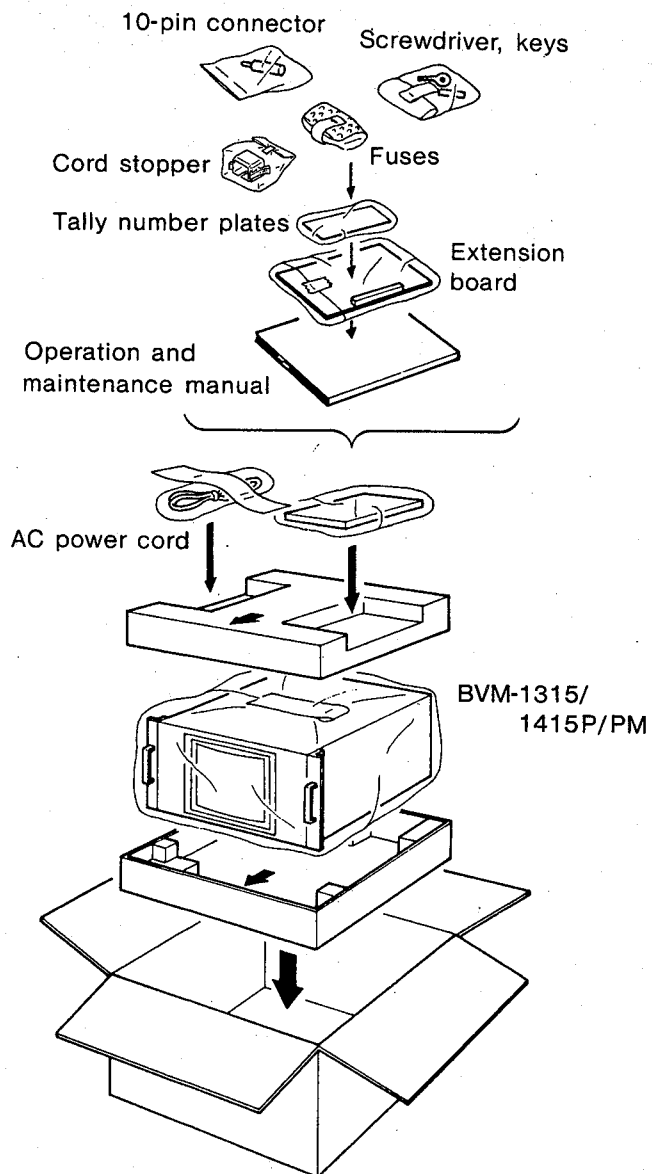
Fuses (3)

Tally number plates (1 set)

Operation and maintenance manual (1)

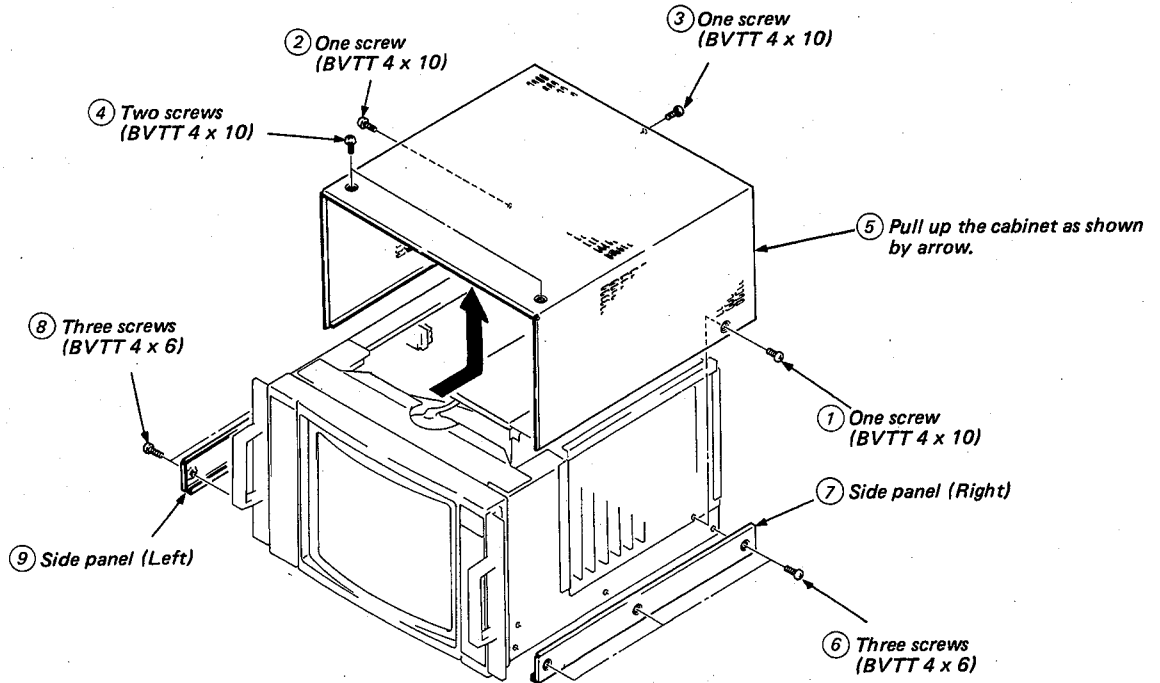
Design and specifications subject to change without notice.

## 1-6. PACKING

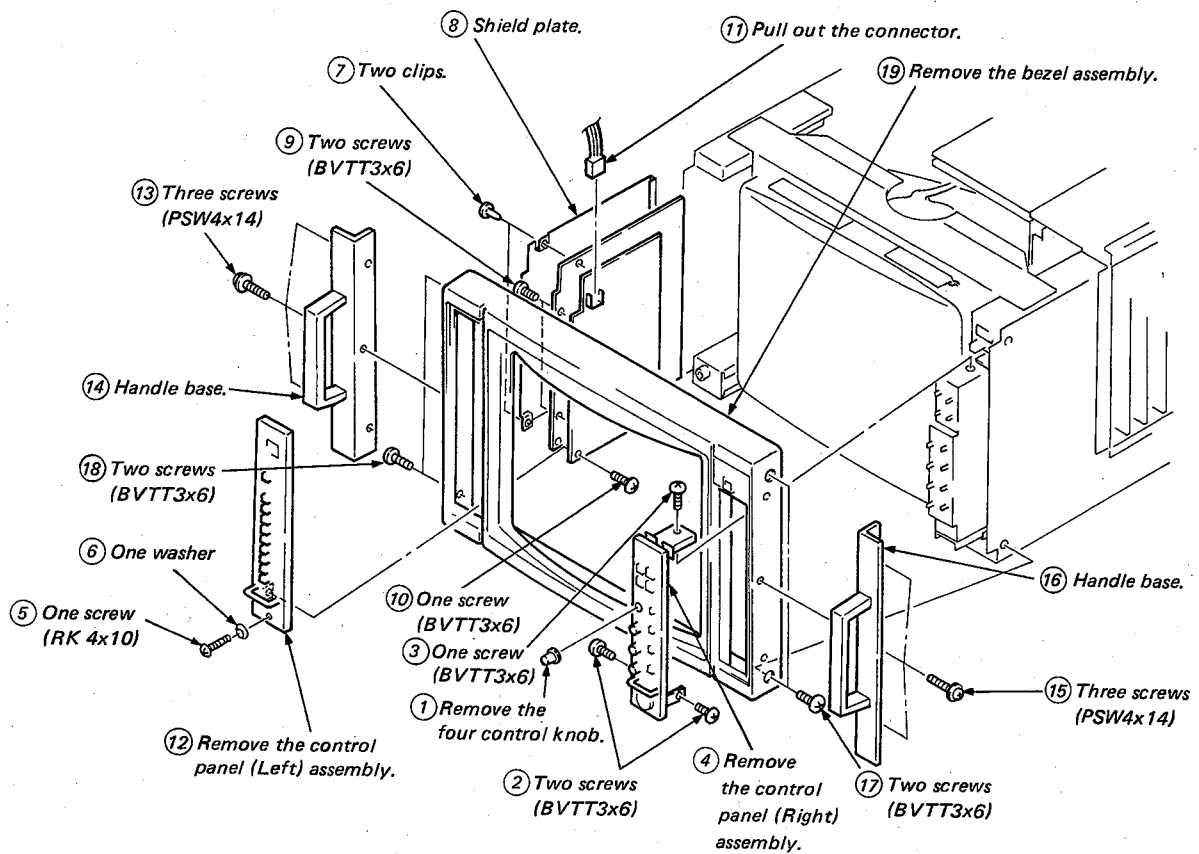


## SECTION 2 DISASSEMBLY

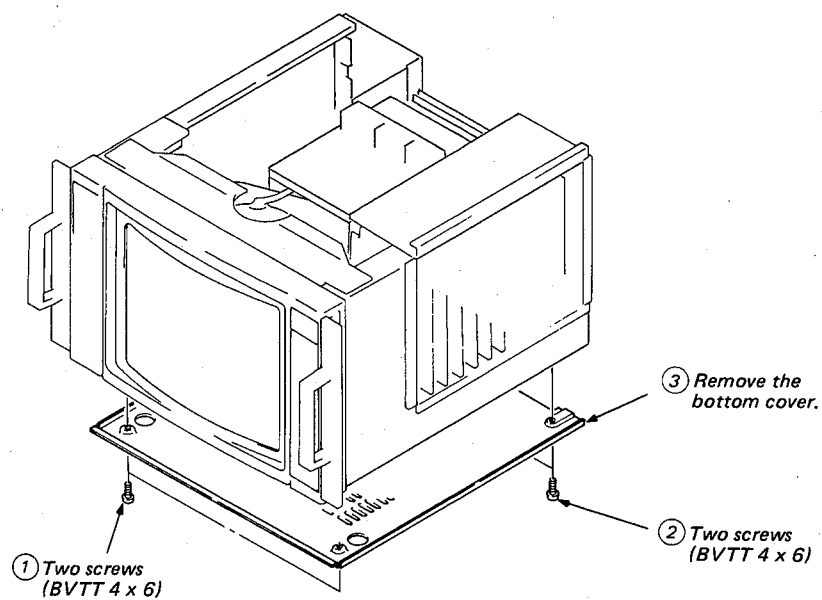
### 2-1. CABINET REMOVAL AND THE SIDE PANELS



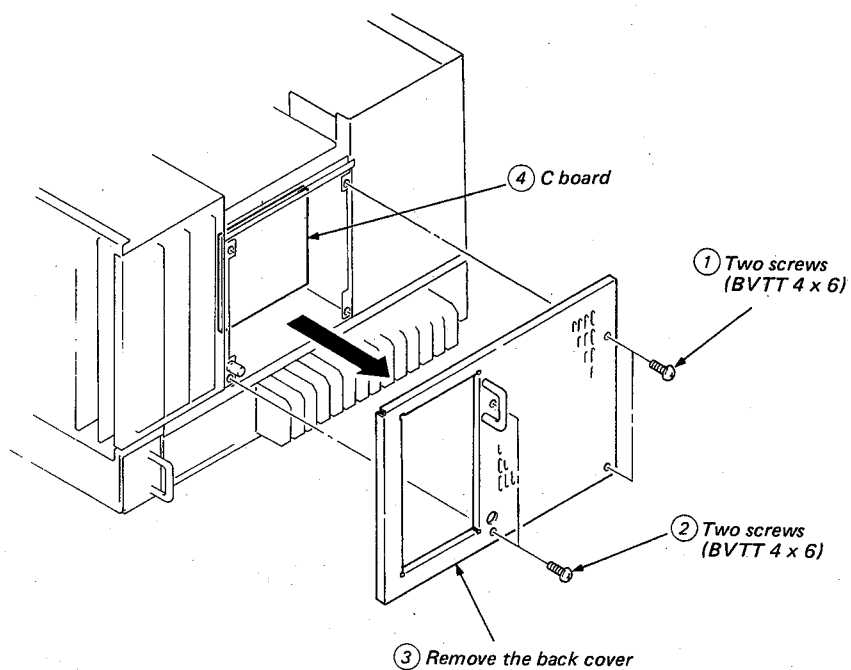
### 2-2. BEZEL ASSEMBLY REMOVAL



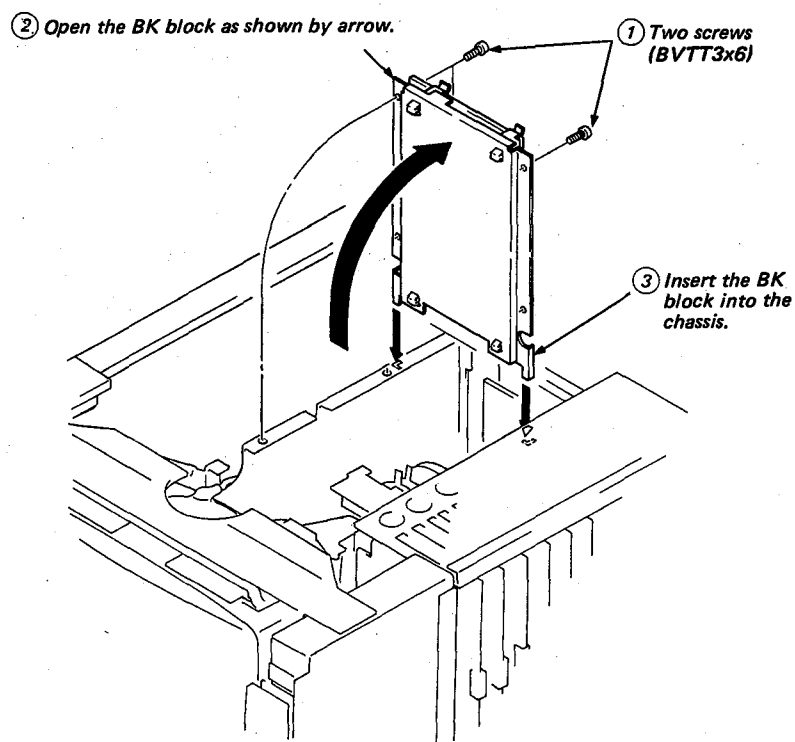
## 2-3. BOTTOM COVER REMOVAL



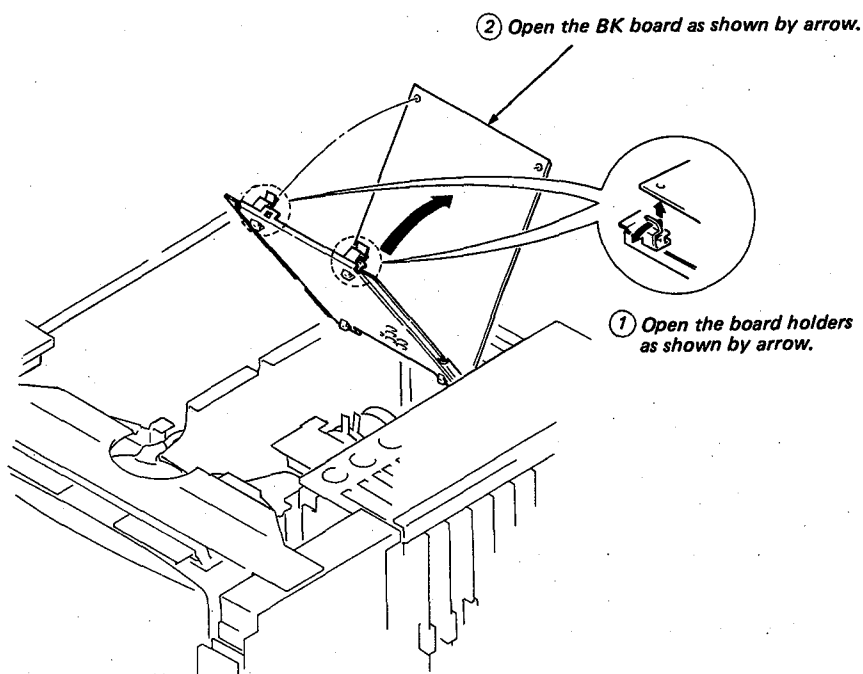
## 2-4. CHECK OF C BOARD



## 2-5. BK BLOCK REMOVAL

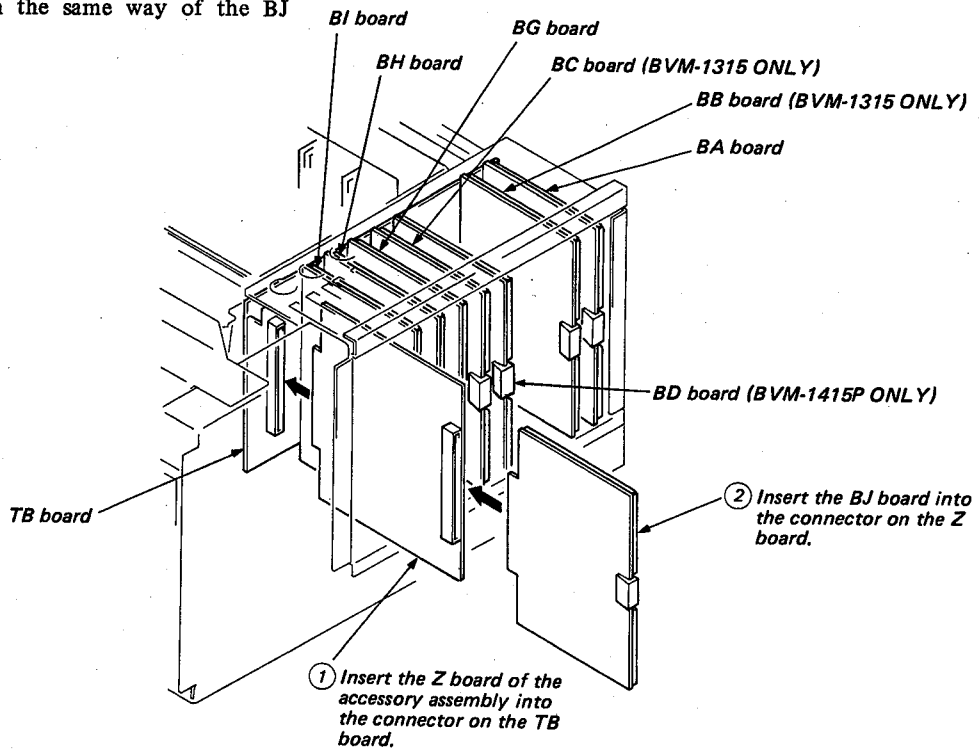


## 2-6. CHECK OF BK BOARD

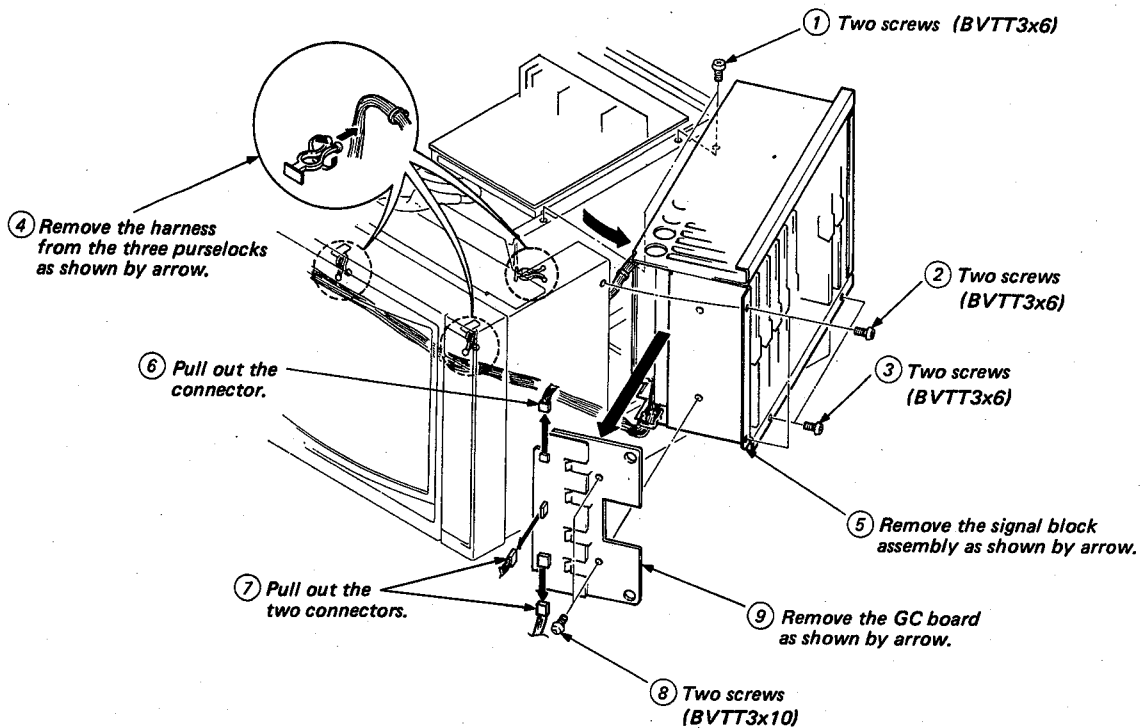


## 2-7. CHECK OF BA, BB, BC, BD, BG, BH, BI AND BJ BOARDS

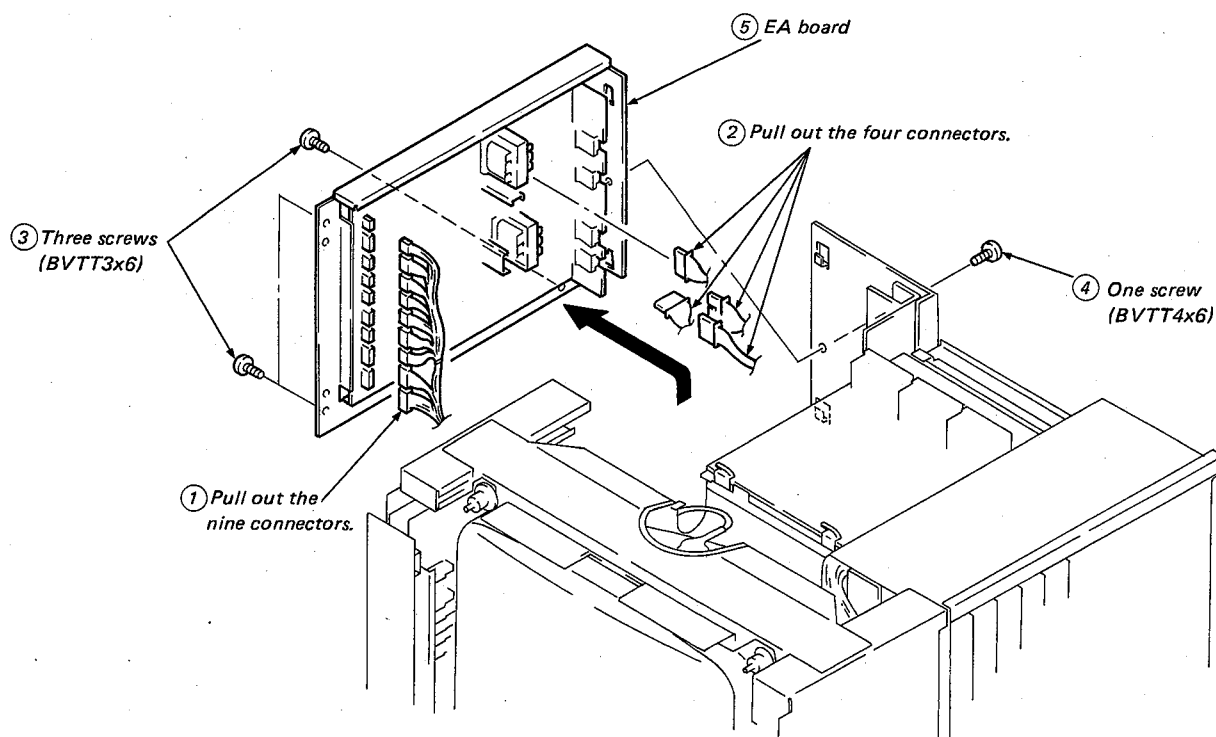
**Note:** The BA, BB, BC, BD, BG, BH and BI boards can be checked in the same way of the BJ board.



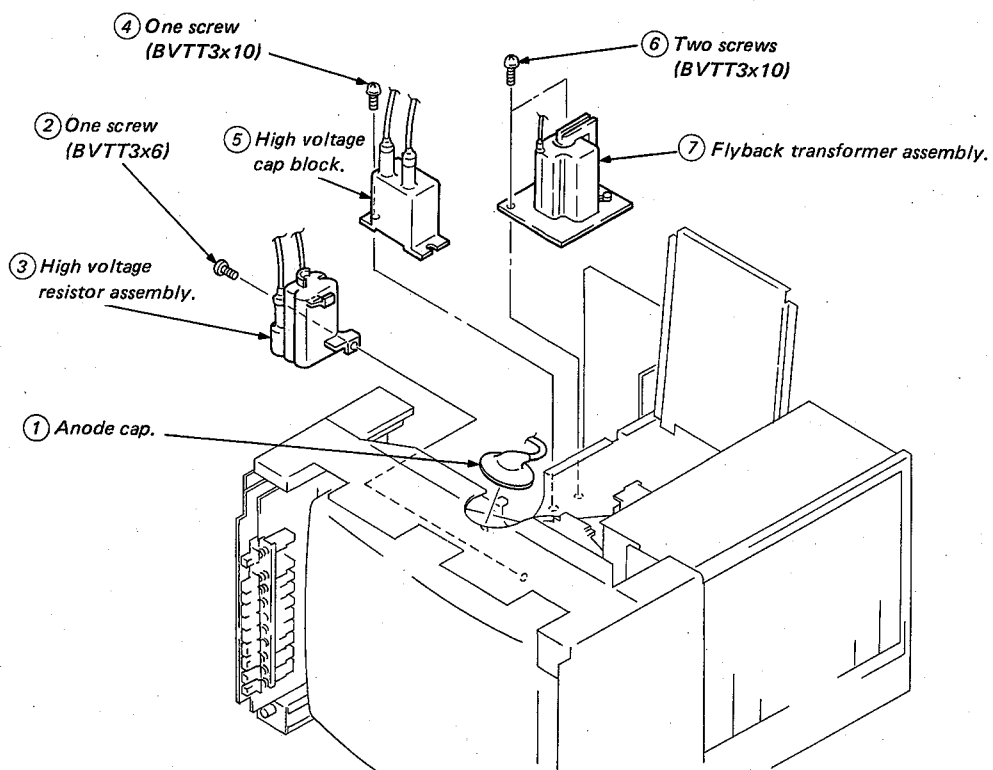
## 2-8. GC BOARD REMOVAL



## 2-9. EA BOARD REMOVAL

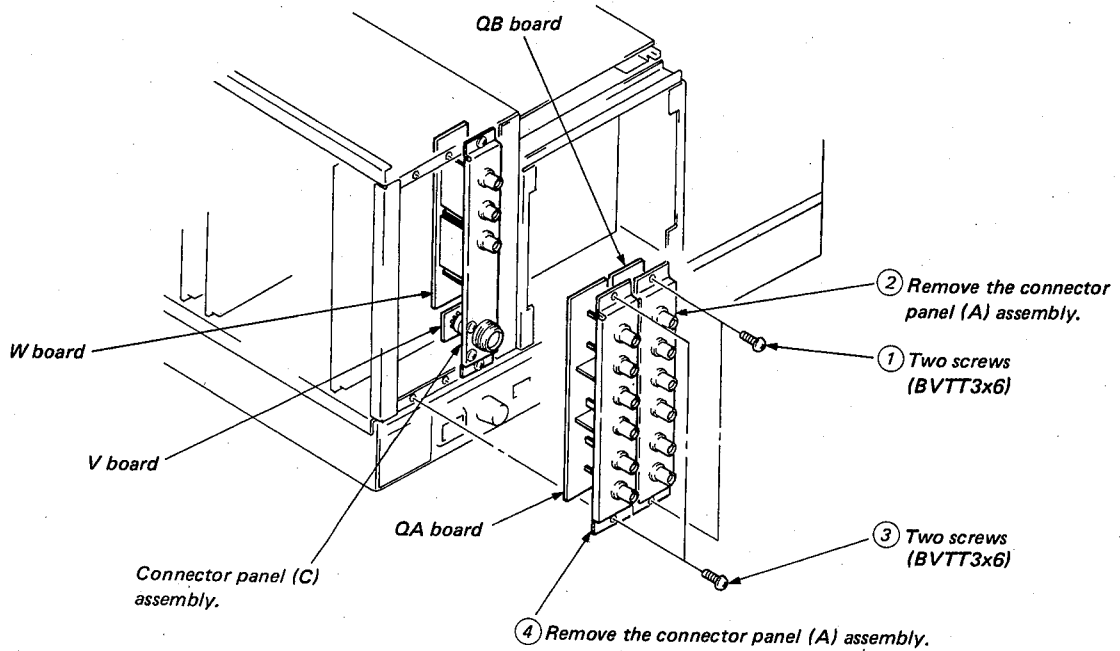


## 2-10. FLYBACK TRANSFORMER AND HIGH VOLTAGE BLOCK REMOVAL

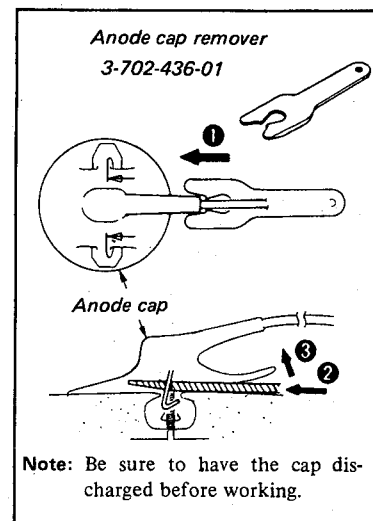
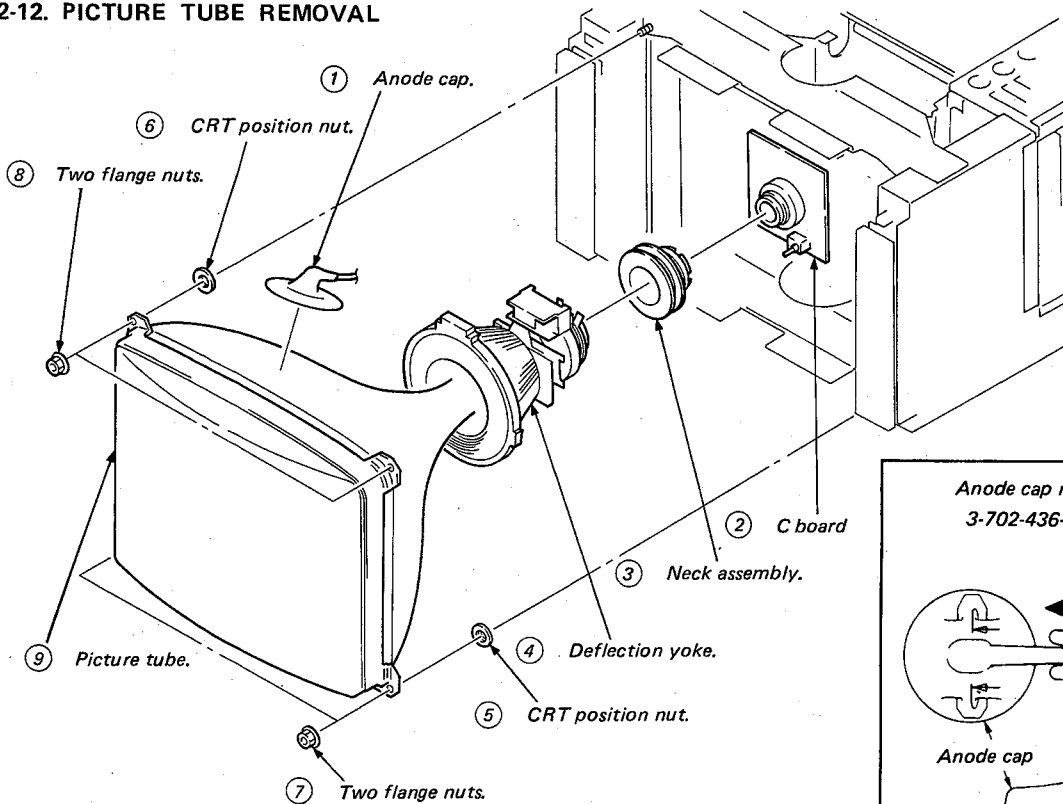


## 2-11. QA, W AND V BOARDS REMOVAL

**Note:** Connector panel (C) assembly can be removed in the same way.



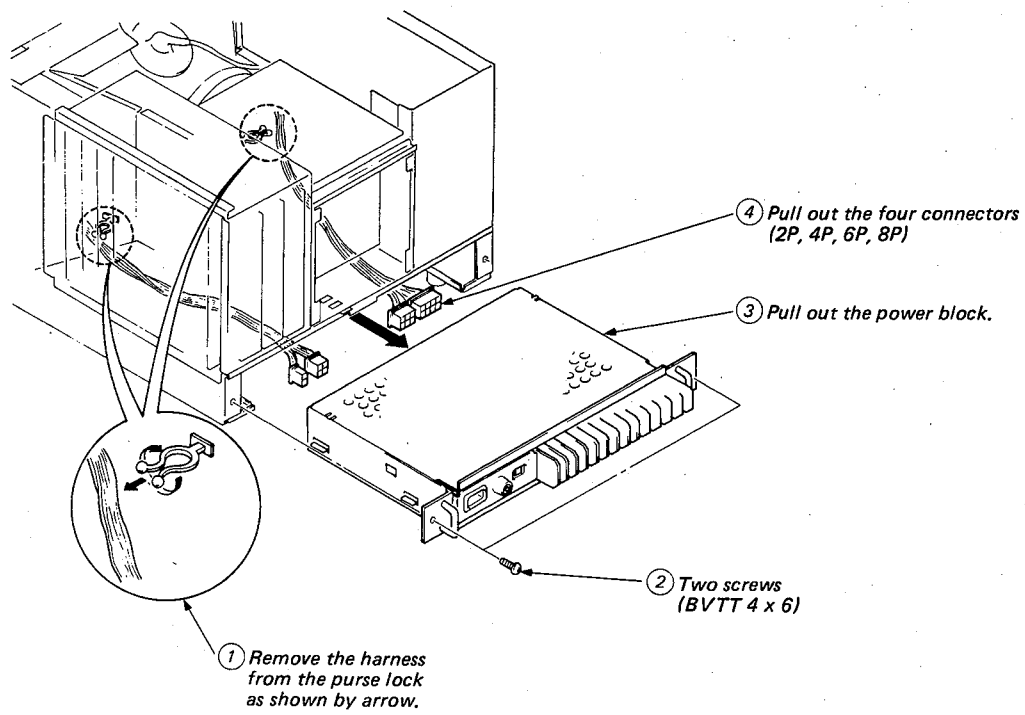
## 2-12. PICTURE TUBE REMOVAL





## 2-13. POWER BLOCK ASSEMBLY REMOVAL

**Note:** Remove the bottom cover before the follow operations.



## SECTION 3 CIRCUIT DESCRIPTIONS

### 3-1. QA, QB, BA BOARDS

#### 3-1-1. Input Circuit

##### Cable Compensation (QA, QB)

CABLE COMPENSATION is composed of inductance L and capacitor C1 (Figure 1) in QA board and performs return loss compensation.

Grounding or floating in input terminal can be selected by switch S1.

On floating mode, common mode rejection can be performed. QB board also has same function.

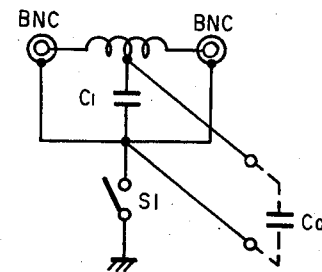


Figure 1

##### Hook Up Circuit (BA)

This circuit is composed of transistors Q101-105 and performs common mode rejection when SW S1 is selected to the floating mode.

In Figure 2, Gains of amplifier for input A and B are derived as follows.

$$A = \frac{R_c}{R_i} : \text{Gain of amplifier for input A}$$

$$B = -\frac{R_c}{R_i} : \text{Gain of amplifier for input B}$$

When input  $(e_c + e_i)$  is applied to input A and input  $(e_c - e_i)$  to input B, then output  $e_o$  is

$$e_o = \frac{R_c}{R_i} (e_c + e_i) + (-\frac{R_c}{R_i}) (e_c - e_i) = 2 \frac{R_c}{R_i} e_i$$

This equation indicates that  $e_c$  is eliminated and there is no common mode signal in output signal.

On hook up circuit, NF Amplifier (Negative Feedback) is used to get frequency response flat.

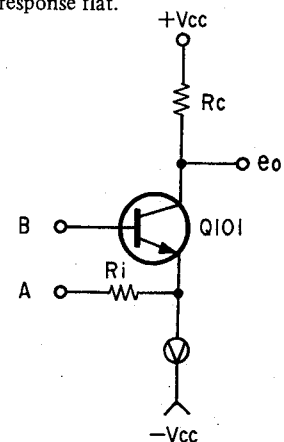


Figure 2

##### Input Select Sw, Sync Select SW (BA)

For composite video signal, VIDEO A/B/TEST mode is selected by INPUT SELECT SW (IC1). For sync signal, INT SYNC/EXT SYNC is selected by SYNC SELECT SW IC2.

#### 3-1-2. Sync AGC Circuit

This circuit is composed of following components; LPF (Low Pass Filter) (Q701), variable gain amplifier (Q702-Q705), bias control circuit (Q708-Q710), gain control circuit (Q711, 712) and amplifier (Q706, 707), Figure 3 shows block diagram of this circuit.

An inverted composite video signal or composite sync signal ( $e_o$ ) is derived at the collector of transistor Q707.

The bias control circuit compares maximum value of  $e_o$  with base voltage of Q708 (E1) and controls bias of amplifier so that they match.

Also the gain control circuit compares pedestal level of  $e_o$  with base voltage of Q711 (E2), and controls variable gain amplifier so that they match.

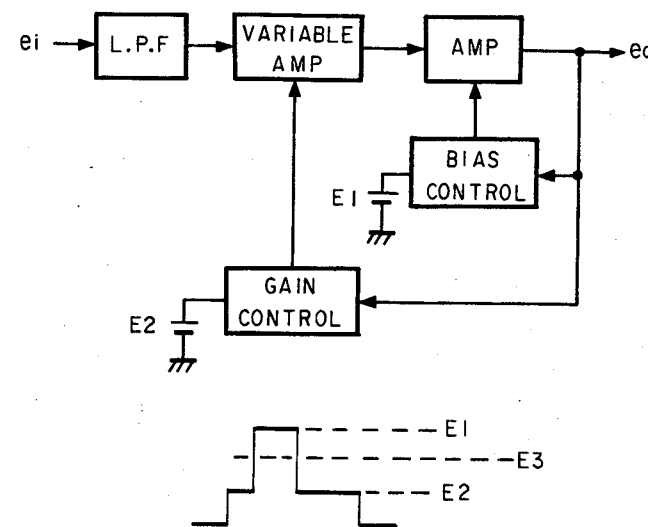


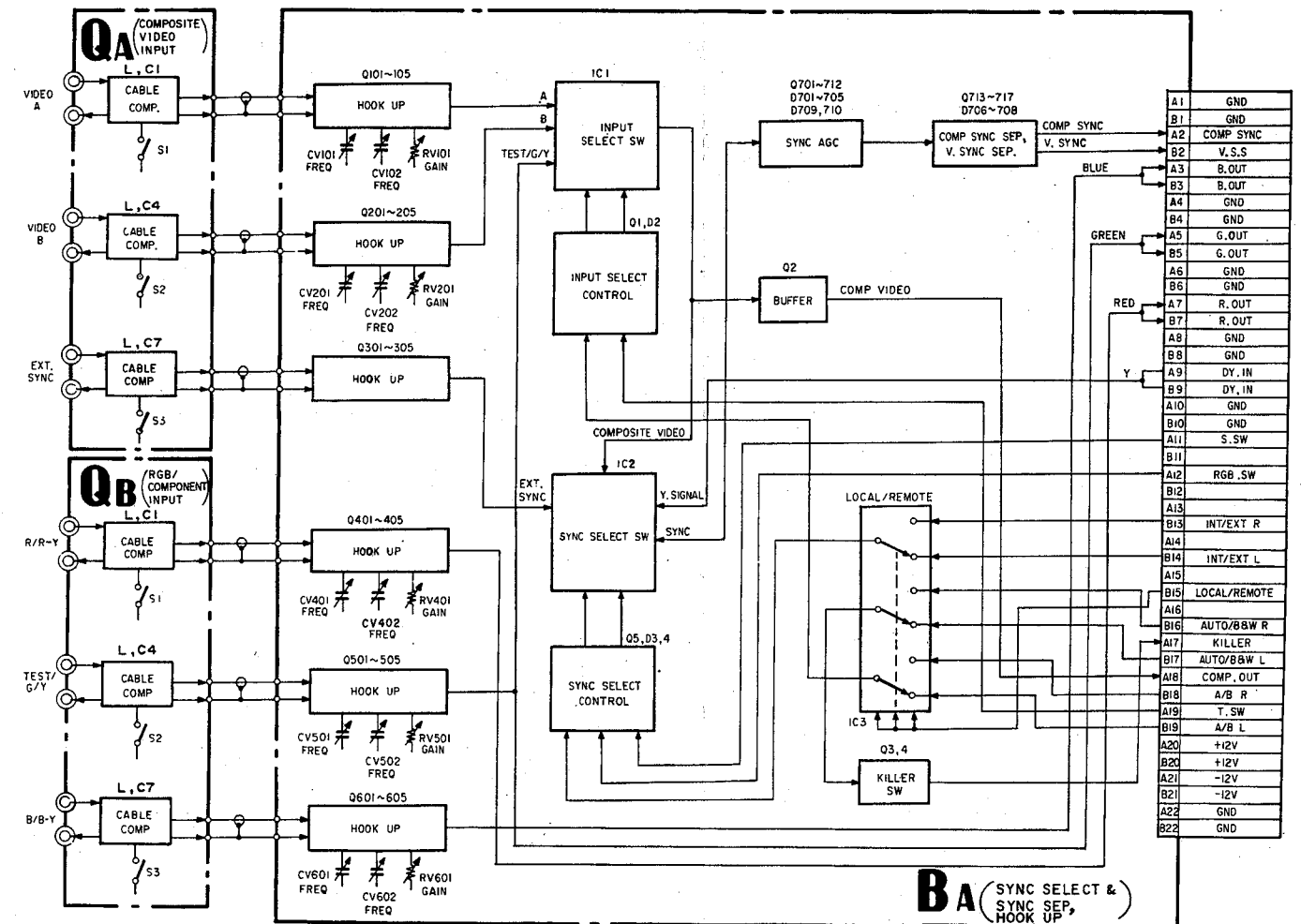
Figure 3

##### Composite Sync Separation, Vertical Sync Separation

Composite sync is separated from composite video signal or composite sync by comparing voltage  $e_o$  with the base voltage of transistor Q713 (E3).

Horizontal component in composite video signal or composite sync signal is removed by LPF (Low Pass Filter, Q716) and Vertical sync is separated by transistor Q717.

### BLOCK DIAGRAM OF QA, QB, BA BOARDS



### 3-2. BG BOARD

#### 3-2-1. Luminance Signal Circuit

##### Filter SW

IC1 works as a selector switch of composite video signal or luminance signal derived from Y/C separation circuit. This IC activates by either FILTER-SW in right side drawer or killer signal.

##### Aperture Control

Aperture control circuit is composed of DL1(delay line), transistors Q5, 7, 8 and IC2. IC2 operates as a variable resistor. Resistance value between Pin ① and ③ is controlled by the potential between pin ③ and pin ④, also pin ① and pin ⑥.

Input signal:  $e_{r0}$ ,

Delayed signal by delay line:  $e_{r1}$

Second delayed signal:  $e_{r2}$

See Figure 4

$e_1$  (at base of transistor Q5) is obtained as below due to the combination of direct wave and reflected wave by DL1.

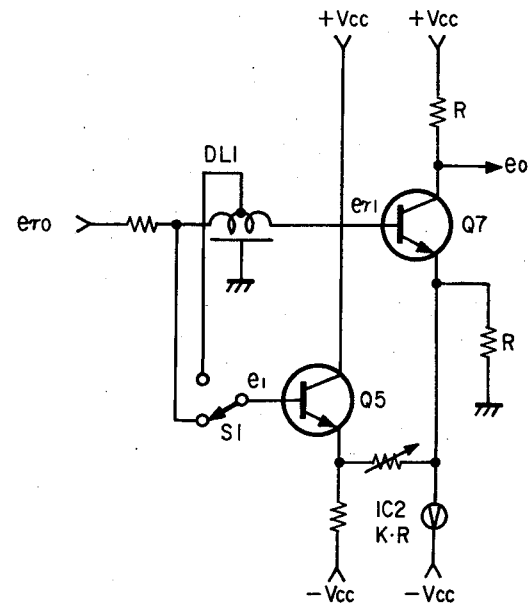


Figure 4

$$e_1 = (e_{r0} + e_{r2})/2$$

Therefore  $e_0$  is

$$e_0 = -\underbrace{(e_{r1} + \frac{1}{K}(e_{r1} - \frac{1}{2}(e_{r0} + e_{r2})))}_{1st \text{ term}} - \underbrace{\frac{1}{2}(e_{r0} + e_{r2}))}_{2nd \text{ term}}$$

K: variable constant

In the above equation, 1st term shows waveform A in Figure 5 and 2nd term shows waveform B. When K is variable, amount of pre-shoot and overshoot can be varied.

Switch S1 is used for selection of boost frequency.

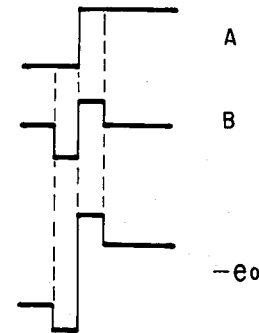


Figure 5

#### Y Delay, Y Buffer Amplifier

Y/C delay time can be matched by delay line DL2 and Y signal is amplified and fed to the next stage.

#### 3-2-2. Color Gain Control Circuit

In this section (R-Y) signal processing is described as below, but (B-Y) signal is processed by the same way as (R-Y) signal.

##### R-Y Amplifier and Clamping

The R-Y color difference signal from the decoder board is amplified at the amplifier composed of transistors Q21 and Q22 and clamped at the Horizontal Sync by transistors Q23 and IC3.

##### R-Y Gain Control Amplifier

This is a variable gain control amplifier composed of variable resistor element of IC4 and transistors Q25-Q27. Gain of this amplifier can be controlled by the color gain control voltage at the pin ⑫ of IC4.

##### AGC Pulse Generator

Generates the reference pulse for AGC (Automatic Gain Control) of color gain control circuit.

##### Gain Control Amplifier for AGC Pulse

Circuit is the same as R-Y GAIN CONTROL AMPLIFIER. Gain of this amplifier is controlled by the voltage at pin ⑧ of IC4.

##### Color Gain Control

AGC pulse, which is output signal of Gain control amplifier for AGC pulse, is clamped by IC6 (2/3) and is made sampling by IC6 (3/3). Amplitude of AGC pulse and DC voltage supplied from CHROMA control on the front panel are compared and matched by IC7 (1/2) with controlling the above gain control amplifier. This control voltage is supplied to the control terminals of R-Y and B-Y gain control amplifiers and controls color gain.

#### 3-2-3. G-Y MATRIX amplifier

G-Y signal is obtained by matrixing R-Y signal and B-Y signal with the amplifier composed of transistors Q44 and Q45.

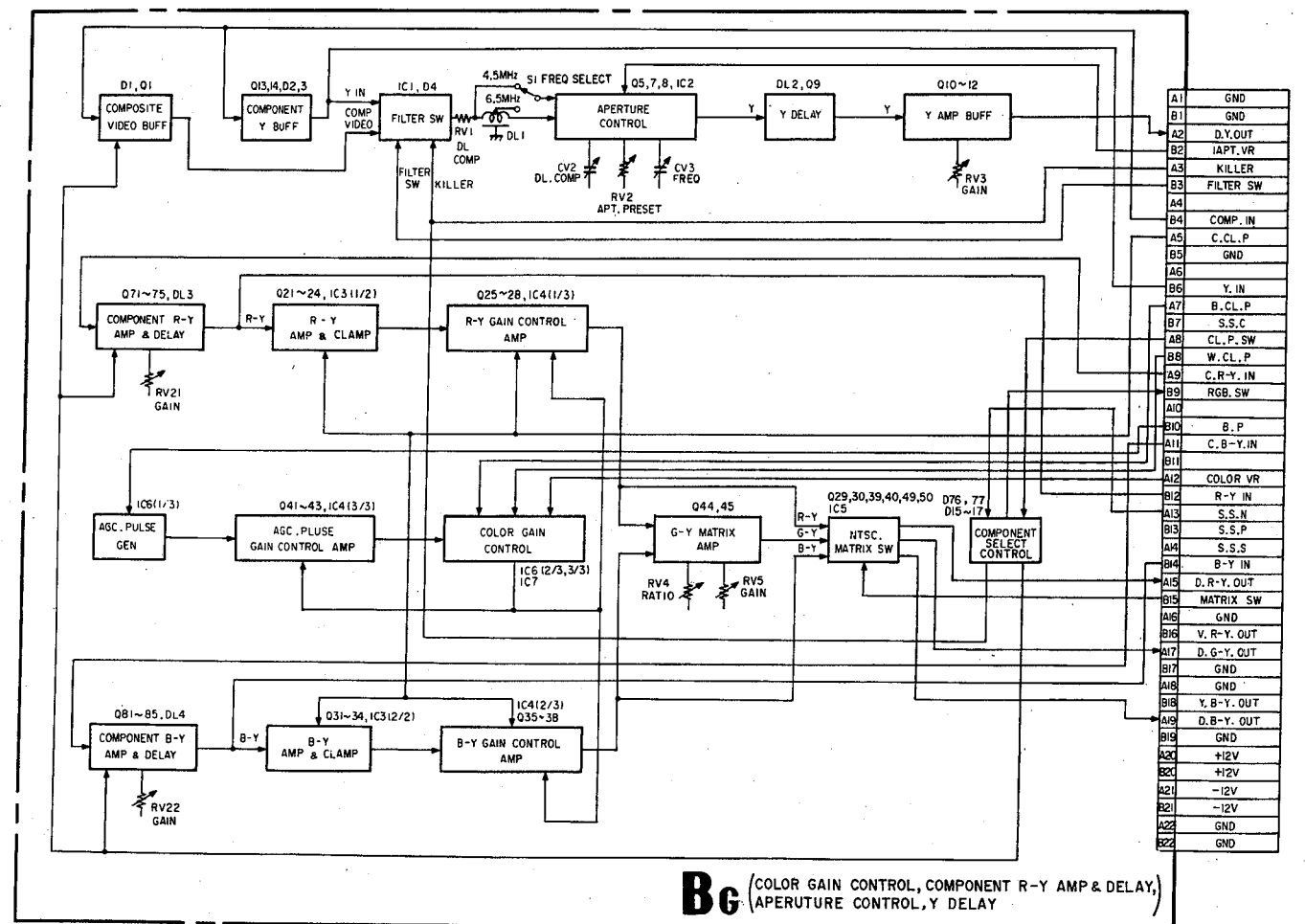
#### 3-2-4. NTSC MATRIX SW

NTSC MATRIX mode operation is obtained by the matrix circuit composed of resistor networks CP14-CP19, transistor Q29, Q30, Q39, Q40, Q49, Q50 and IC5. CP14-CP19 perform matrixing and IC5 works as a switch.

#### 3-2-5. COMPONENT R-Y Amplifier and Delay Circuit

R-Y signal of COMPONENT signal is compensated with amplitude, polarity and delay time to match the R-Y signal of decoder output.

### BLOCK DIAGRAM OF BG BOARD



**B<sub>G</sub>** (COLOR GAIN CONTROL, COMPONENT R-Y AMP & DELAY, APERTURE CONTROL, Y DELAY)

3-3. BH BOARD

3-3-1. Switching Circuit Between Y (Luminance) Signal, Color Difference Signal and RGB Signal, AGC Pulse Insertion, Y-C Matrix

Switching Circuit of Y Signal, Crosshatch Signal and SET UP Signal, Buffer

Y signal, crosshatch signal and SET UP signal are selected by the switcher (IC1 (1/3) (2/3)) and selected signal is output via buffer Q1.

Switching Circuit of R-Y Signal, Red Signal and SET UP Signal (Same as B-Y, G-Y Signal)

R-Y signal, Red signal, SET UP signal are selected by IC2 (1/3, 2/3) and selected signal is output via buffer Q4.

Y Signal Screening (Same as R-Y, B-Y, and G-Y Signals)

The signal is performed SAMPLE and HOLD (S/H) at the back porch of signal by transistor Q2 and IC5 (2/2). Y screening is performed by replacing S/H output signal, by the original signal. For color difference signals screening is made at the Horizontal Sync portion.

Red Matrix, Blue Only SW, Buffer (Same as Green and Blue)

Red is obtained by Y-C matrix circuit composed of resistor network CP9 from color difference signals.

AGC pulse from pulse generator is inserted into Red signal for contrast control.

IC7 activates by the Blue only SW on the front panel. Blue only SW is used for the display of blue signal as a monochrome picture.

3-3-2. Contrast Control, Brightness Control, Peak Limitter

Red Contrast, and Brightness Control Amplifier (Same as Green and Blue)

This is a variable gain control amplifier composed of variable resistor element IC101 and transistor Q102 and Q103. By controlling the voltage at pin (4) of IC101, contrast control is performed, and brightness control is done by controlling the bias voltage of transistor Q102.

Red limiter (Same as Green and Blue)

When excess input signal comes in, amplitude is limited by the limiter composed of transistors Q104 and Q105.

Red Contrast Control

AGC pulse inserted in Red signal is clamped by transistor Q107 and sampled by transistor Q108.

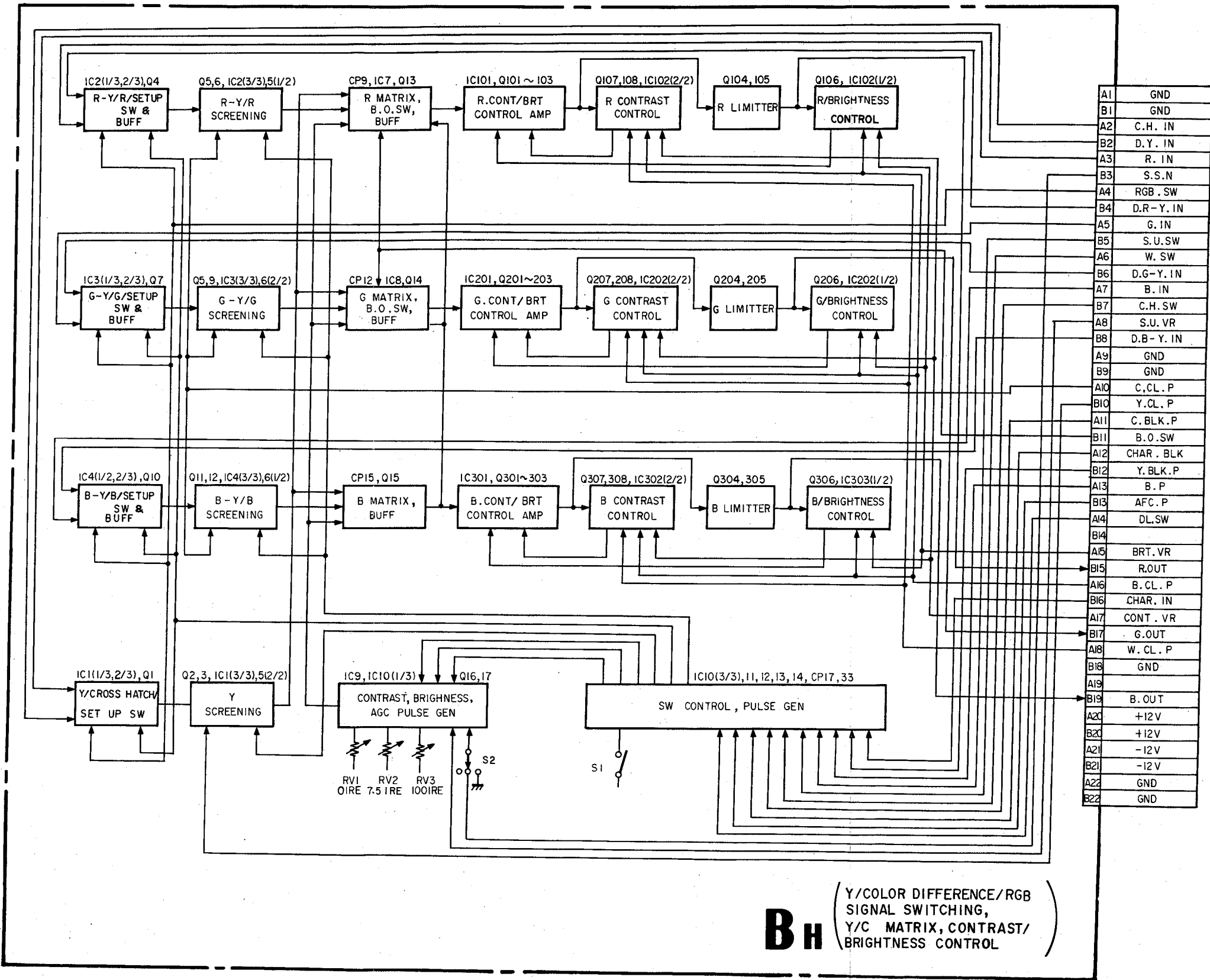
Amplitude of above AGC pulse is compared with the reference voltage applied from CONTRAST control on the front panel in IC102 (2/2).

Contrast control is performed by controlling the gain of Red contrast brightness control amplifier so that these voltages may match.

Red Brightness Control (Same as Green and Blue)

The black level of Red signal is performed SAMPLE and HOLD (S/H) by transistor Q106. This S/H voltage is compared with the reference voltage applied from Brightness control on the front panel in IC102 (1/2). Brightness control is performed by controlling the bias of Red contrast Brightness control amplifier so that these voltages may match.

BLOCK DIAGRAM OF BH BOARD



### 3-4. BI BOARD

#### 3-4-1. Red Screen SW, AGC Pulse Insertion (Same as Green and Blue)

Red signal can be cut off by RED SCREEN SW on the front panel. Horizontal rate AGC pulse is removed and the reference pulse is inserted in the signal for the GAIN and BIAS adjustment of video output amplifier and for the beam control circuit.

#### 3-4-2. Red Limiter, Gain Bias Control Amplifier

This limiter is used for limiting the excess input level of the signal below 0V DC.

The GAIN/BIAS CONTROL amplifier is composed of variable resistor element and transistors as same as contrast control amplifier (See section of BH board)

#### 3-4-3. Red Feedback Amplifier, Red Gain Control Red Bias Control Circuit

RED FEEDBACK amplifier inverts the phase of the signal derived from VIDEO OUTPUT amplifier via NF BUFF (Negative Feedback Buffer) in BK board.

The BIAS of VIDEO OUTPUT AMPLIFIER is controlled by RED BIAS CONTROL circuit so that the black level of inverted signal may be 0V DC.

(This time, black level of VIDEO OUTPUT will be -90V DC.)

RED GAIN CONTROL circuit controls the gain of VIDEO OUTPUT AMPLIFIER so that the level of the reference pulse may match to the voltage at pin ③ of IC103.

(When GAIN control (RED) in the drawer is turned, the level of the reference pulse inserted in section 1 changes. And amplitude (Gain) of Red signal changes so that the amplitude of the reference pulse derived from RED FEEDBACK amplifier may be maintained constant by GAIN CONTROL circuit.)

#### 3-4-4. Red Cathode Current Detection, Red Beam Current Control Circuit (I-V Conversion)

Refer to the BK board section of beam control circuit

#### 3-4-5. ABL Detector, Drive Control, Over Drive

The reference level of GAIN CONTROL circuit is controlled by ABL detector and DRIVE CONTROL so that the cathode current of CRT exceeds the predetermined (Preset) value to prevent damage of CRT. OVER DRIVE circuit lights up the OVER LOAD LED on the front panel for warning.

#### 3-4-6. G2 Control Circuit

Circuit diagram of G2 control circuit is shown in Figure 6.

The signal for BM. CURRENT control is fed to base of the transistor Q11 from RED BM. CURRENT control circuit. (Same as G and B)

Transistors Q11-Q13 are turned on and is compared with the reference voltage of base voltage Q14.

And this circuit drives transistor Q3, Q2 located in C board so that Transistor Q3, Q2 in C board drives G2 voltage for adjusting cut off level of CRT.

Base voltage of transistor Q14 (reference voltage) is set so that the voltage of Black level at CATHODE electrode may be +120V DC and maintain Ekco (cut off voltage) +120V constant.

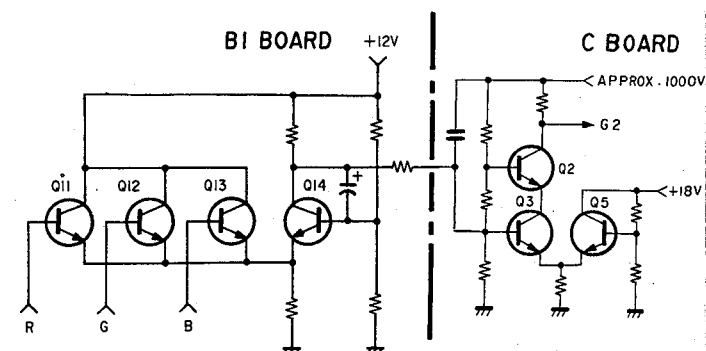
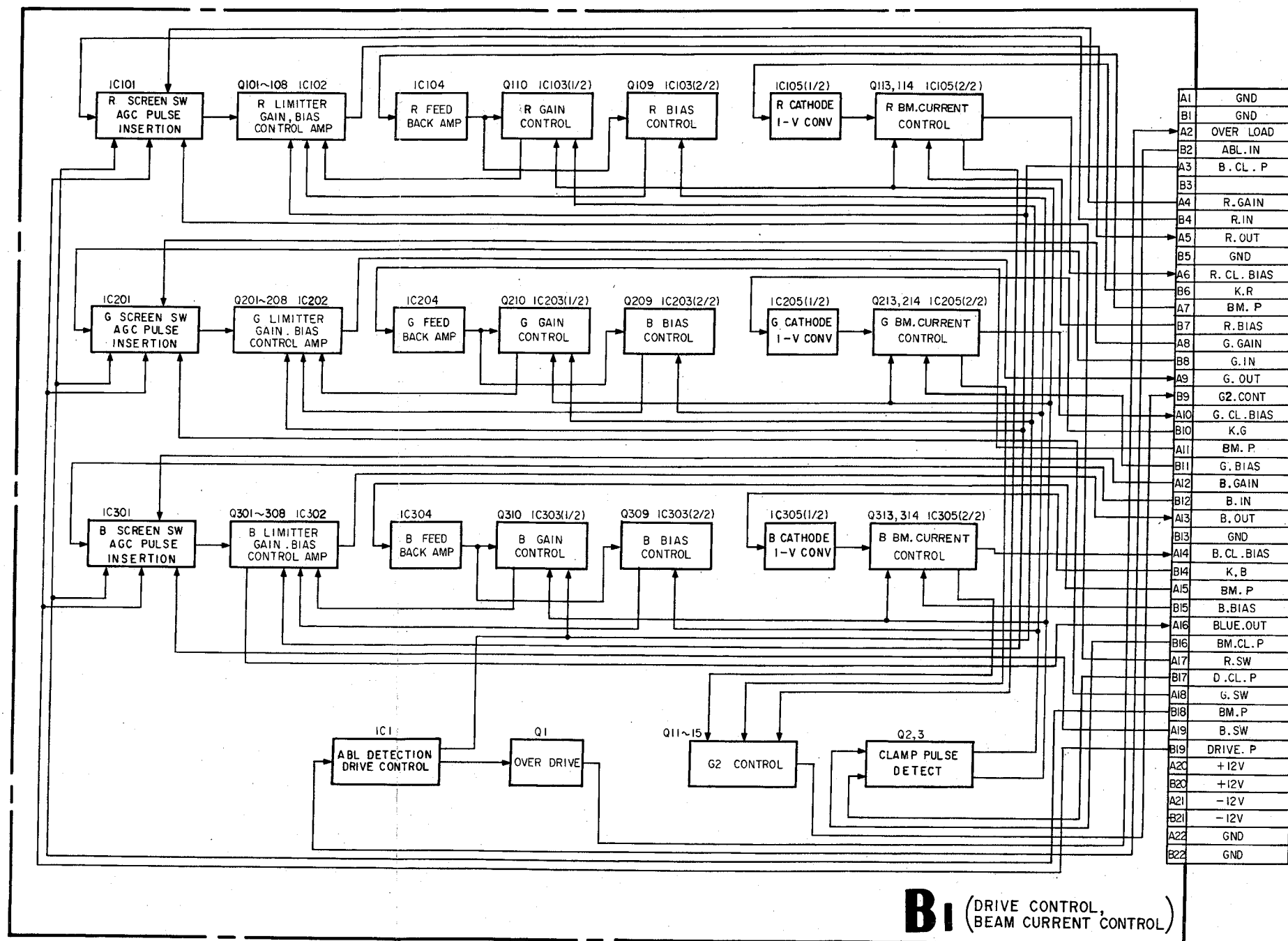


Figure 6

BLOCK DIAGRAM OF BI BOARD



### 3-5. SYNC PROCESSOR, PULSE GENERATOR (BJ BOARD)

#### 3-5-1. 1H Pulse Processing

The composite sync is separated from incoming signal at BA board. And 1H sync is made by separating V sync and equalizing pulse from composite sync.

Also H sync which has constant pulse width is made from 1H sync.

#### 3-5-2. 2fH Multivibrator

This circuit generates 2fH rate pulse from H rate flyback pulse.

#### 3-5-3. Vertical Counter

The 2fH rate pulse is counted down to generate Vertical rate trigger pulse for vertical deflection circuit.

When there is no incoming signal, trigger pulse is generated by vertical counter (384H).

When there is incoming signal with V sync, this counter circuit is reset by V sync and generates trigger pulse synchronized with V sync.

Also in order to increase stability of vertical scanning, noise gating process is made during V sync period.

#### 3-5-4. V Sync and Delay

V sync and V BLANKING pulses are generated by output trigger pulse from vertical counter.

And when V DELAY SW on the front panel is selected ON, these pulses are generated in a V/2 delayed position relative to the V sync position of incoming signal.

#### 3-5-5. Crosshatch Generator

Internal crosshatch signal is made as follows.

The vertical lines are generated by approx. 18fH rate pulses synchronized with flyback pulse.

And flyback pulse is counted down to generate horizontal lines.

#### 3-5-6. Burst Gate Pulse, Y-CLAMP Pulse, C-CLAMP Pulse Generator

The Burst Gate Pulse (B.G.P.), clamp pulse for luminance signal (Y.CL.P) and clamp pulse for color difference signal (C.CL.P) are generated from 1H sync via LCR network and transistors.

#### 3-5-7. Picture Set Up Pulse Generator

This is the gate pulse generator for picture set-up function, and consists of mono multipliers.

#### 3-5-8. Split, Y Blanking, C Blanking Pulse Generator

Y BLANKING pulse (Y BLK P) and C BLANKING pulse (C BLK P) are generated. These pulses are used for the purpose of DC restoration of color difference signal, Y signal and RGB signal. DC restoration is made by inserting the black reference signal during blanking period in the signal. Also C.BLK. pulse is mixed with vertical rate blanking signals for SPLIT display and for B/W display.

#### 3-5-9. Horizontal Rate AGC and Clamp Pulse Generator

COLOR GAIN control, CONTRAST control and BRIGHTNESS control are stabilized by insertion of reference signal and using feedback circuit. Horizontal rate BLACK pulse (B.P), BLACK CLAMP pulse (B.CL.P) and WHITE CLAMP pulse (W.CL.P) are generated here.

#### 3-5-10. Vertical Rate AGC and Clamp Pulse Generator

In this model, BEAM CONTROL circuit is used for high stability in white balance.

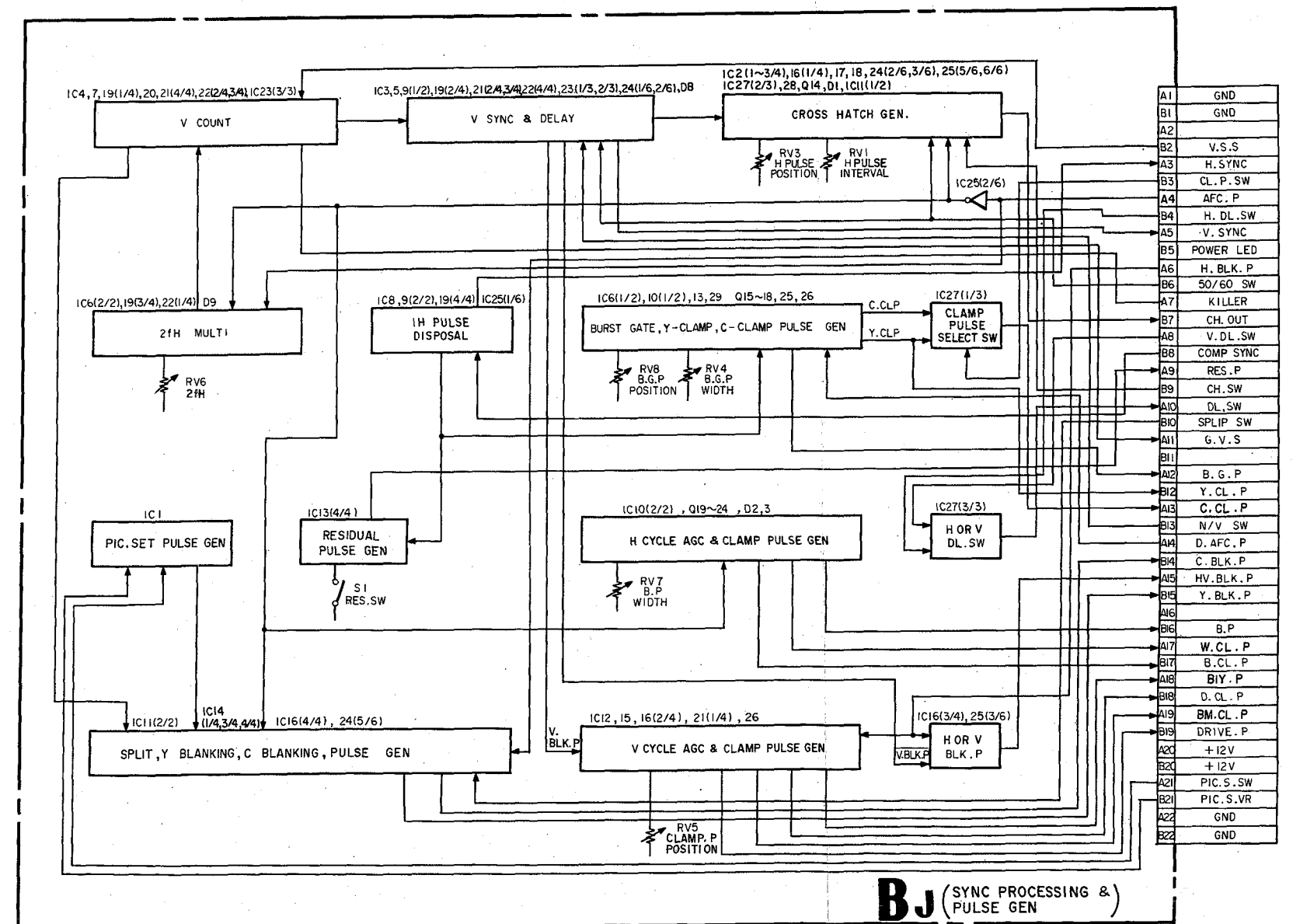
The reference signal is inserted in the signal for gain control circuit in video output amplifier and for beam control circuit. Vertical rate pulses are used for this purpose.

Vertical rate BEAM PULSE (BM.P) DRIVE PULSE (DRIVE.P) and BEAM CLAMP PULSE (BM.CL.P) are generated here.

#### 3-5-11. Others

Black reference is determined at the position of clamping in black reference insertion circuit for both color difference signal and RGB signal. Accordingly C.CL.P is used as clamp pulse for color difference signal processing and Y.CL.P is for RGB signal. CLAMP PULSE SELECTION SW switches C.CL.P or Y.CL.P to the clamp pulse for the insertion of black reference.

BLOCK DIAGRAM OF BJ BOARD



TIMING CHART OF MAJOR PULSE (BJ BOARD)

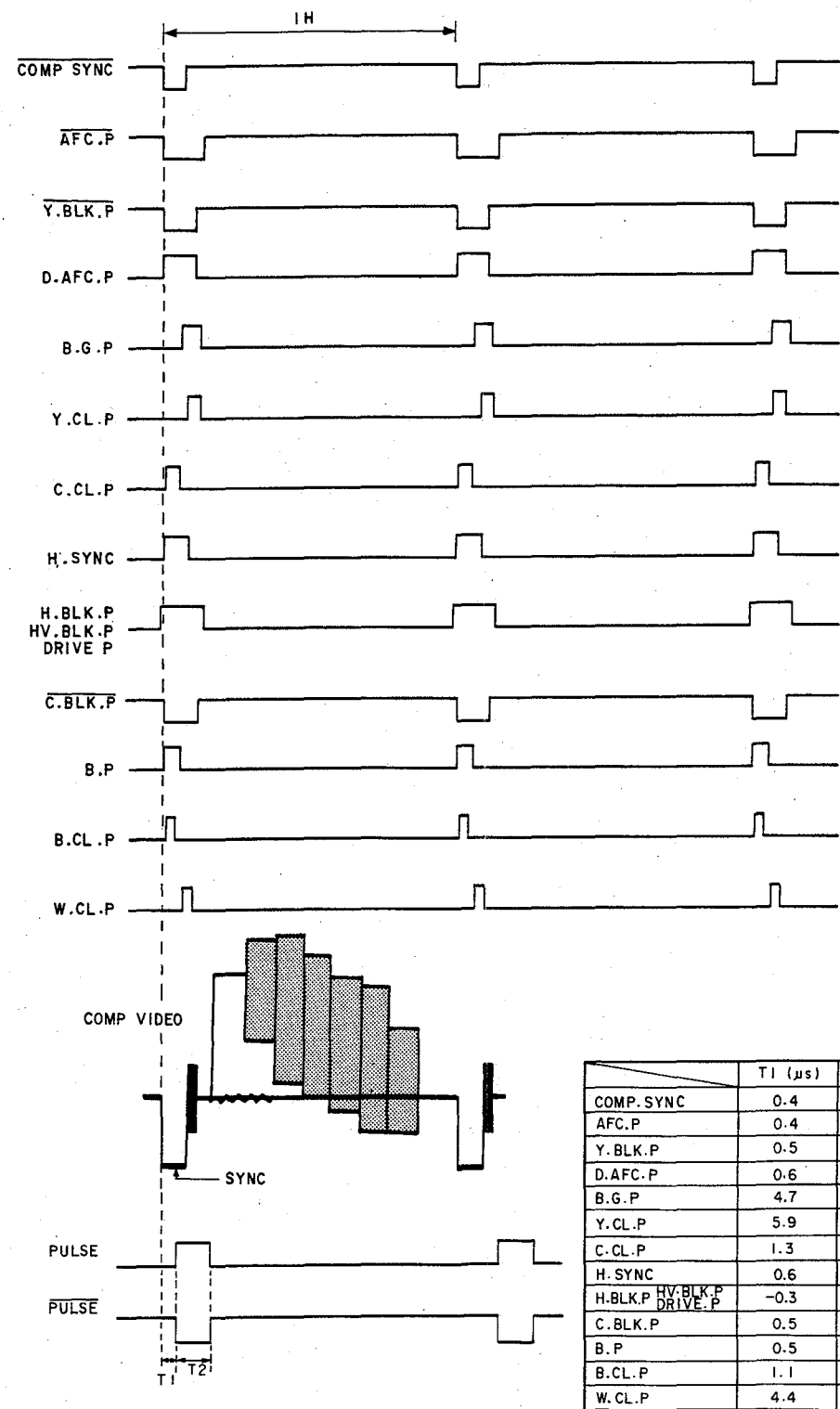


Figure 7

FIELD 1 VERTICAL BLANKING

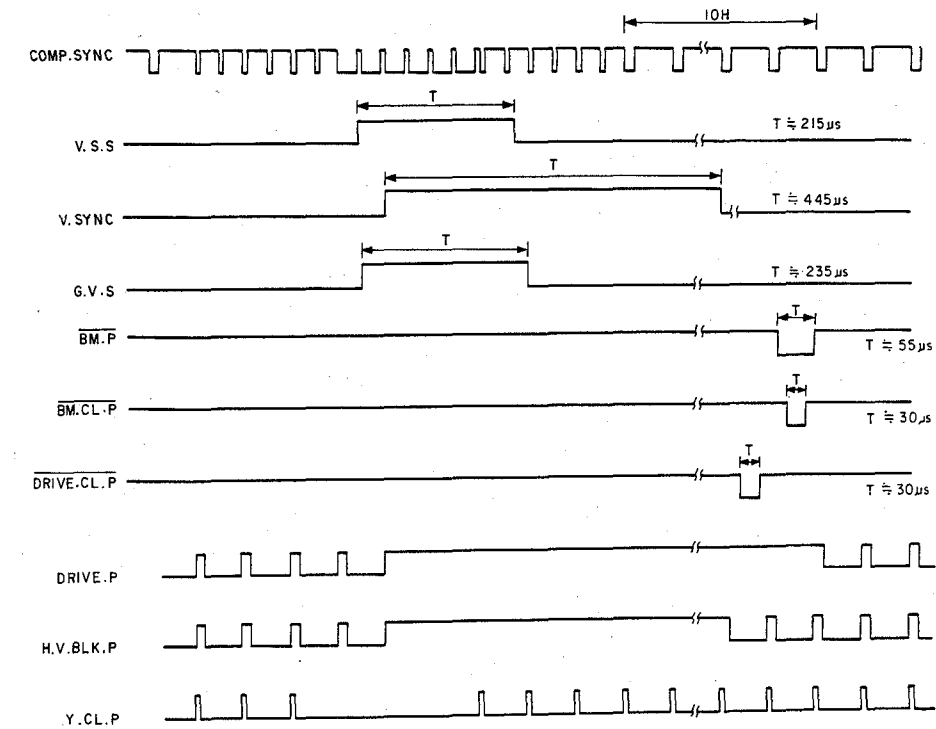


Figure 8

FIELD 2 VERTICAL BLANKING

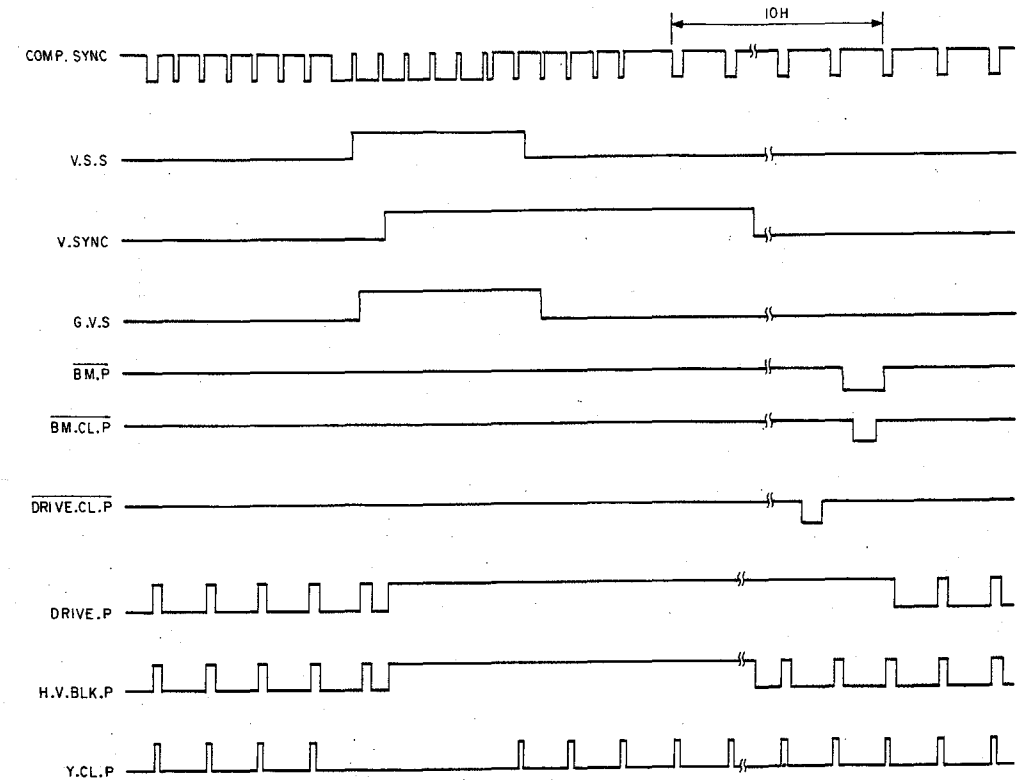


Figure 9

3-6. BK BOARD

Following are described about Red channel. Green and Blue channel are the SAME.

3-6-1. Red Drive Amplifier, Red Buffer

This circuit drives final stage of video output amplifier. Gain is approx. 2

3-6-2. Red Video Output Amplifier and Buffer

This is the final stage amplifier to obtain amplitude enough to drive cathode of CRT.

Gain is approx. 11

The amplified signal is input to the RED cathode of CRT through the next stage's buffer. At this final stage's buffer, the current source (Q107) is applied.

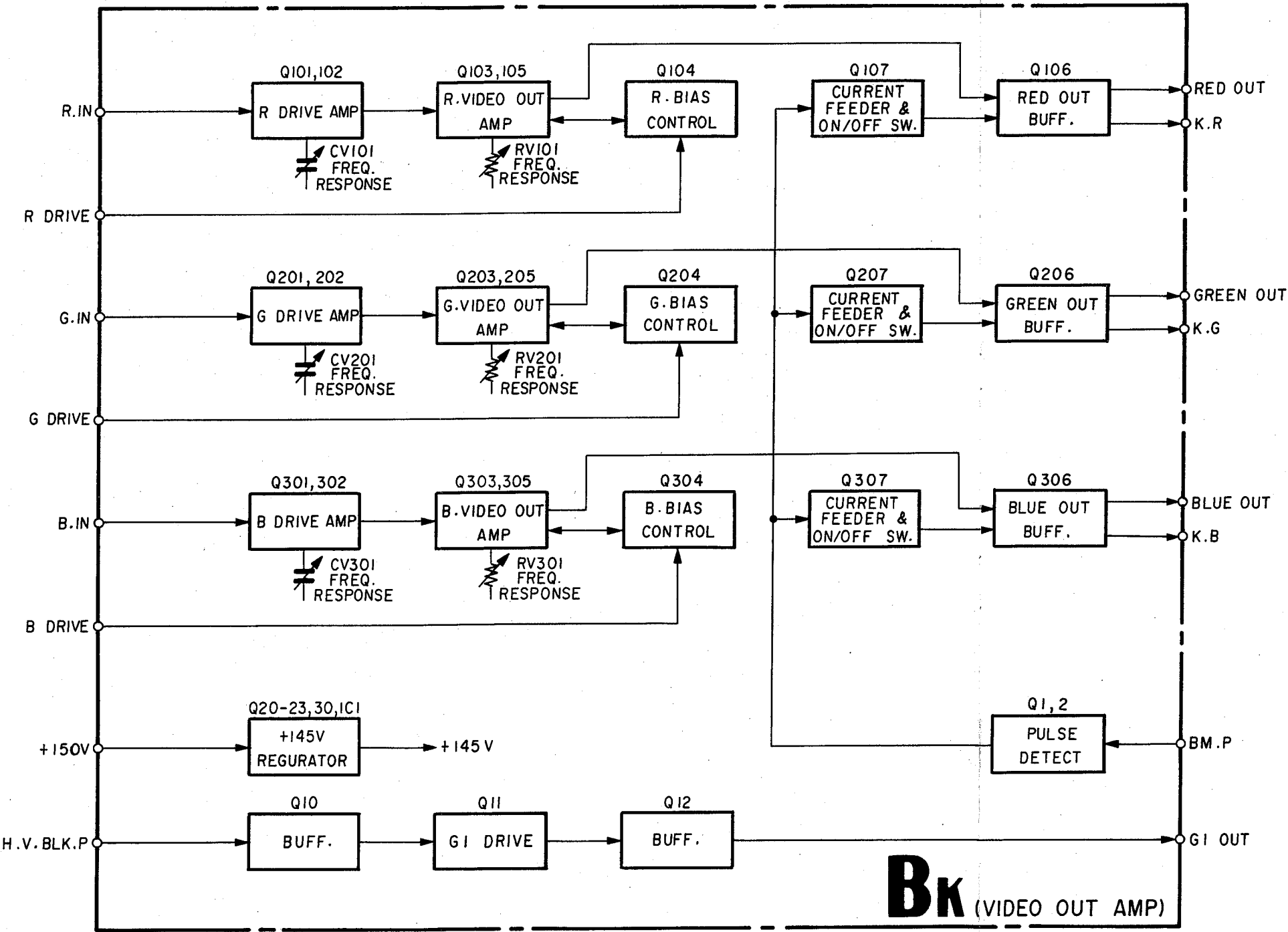
A B.M.P signal of positive polarity is input to the base of Q107. For this B.M.P period, Q107 is cut off, and the current is consequently not supplied to the buffer. So, the only current supplied from cathode is flown from emitter to collector of Q106 in this period.

This board outputs the Q106 collector current as K.R.

3-6-3. H.V. Blanking Circuit

H.V.BLK. pulse is amplified by G1 drive circuit and it is fed to the G1 of CRT through the buffer.

BLOCK DIAGRAM OF BK BOARD





**3-7. Beam control Circuit (BI, BK BOARD)**  
(Same as Green and Blue)

Block diagram is shown in Figure 10.

**3-7-1. Detection of Cathode Current and I-V Conversion (BI BOARD)**

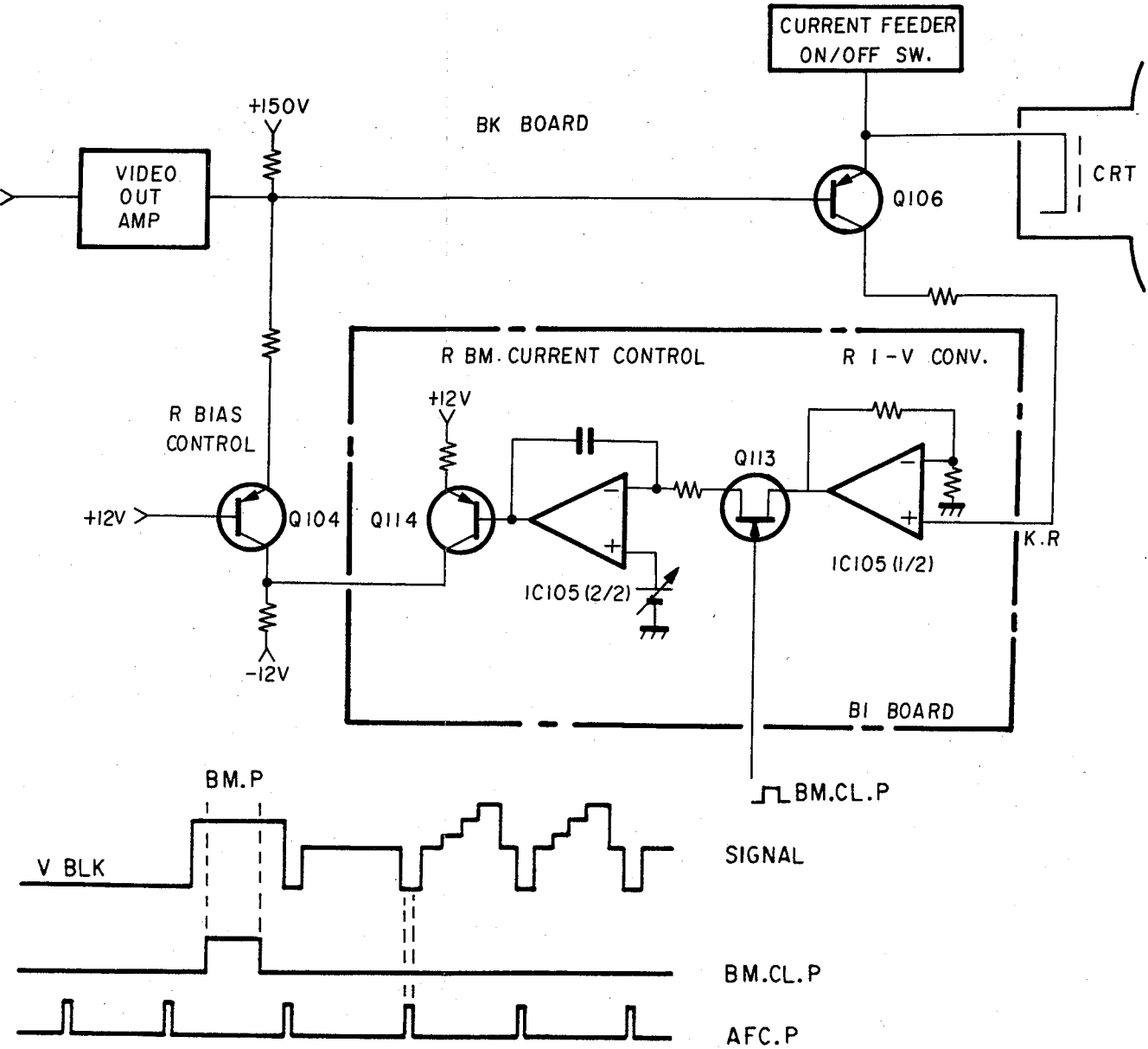
Cathode current is detected as a voltage by using IC105 (1/2)

**3-7-2. Red BM. CURRENT Control (BI BOARD)**

BMP is inserted in the signal during vertical blanking in BI board. This BMP is detected as a cathode current and sampled by BM CLP applied to FET Q113. This BM. CURRENT control circuit controls the base voltage of transistor Q114 so that converted voltage from cathode current and the reference voltage may match.

**3-7-3. Red Bias Control Circuit (BK BOARD)**

In the R BIAS control circuit on the BK board, emitter current of Q104 is controlled according to the variation of Q114 base voltage on the BI board. Therefore, the base voltage of Q106 changes so that the black level of signal that is input to the cathode of CRT is controlled.





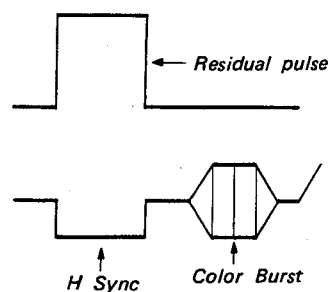
### 3-9. NTSC DEMODULATOR, Y TRAP CIRCUIT (BC BOARD)

### 3-9-1. Chroma Band Pass Filter

The center frequency of this filter is adjusted to the subcarrier frequency (3.58MHz) by L3, and chrominance signal is derived from Q5.

### 3-9-2. Residual SW Circuit

When there is residual subcarrier in the video signal, clamp level of color difference signal changes by turning switch S1 ON/OFF and therefore residual subcarrier can be checked on the picture as a color shift.



**Figure 15**

### 3-9-3. Chroma Amplifier Circuit

Non-inverted signal is fed to R-Y input terminal (IC1 pin ③) of demodulator and inverted signal to B-Y input terminal (IC1 pin ②).

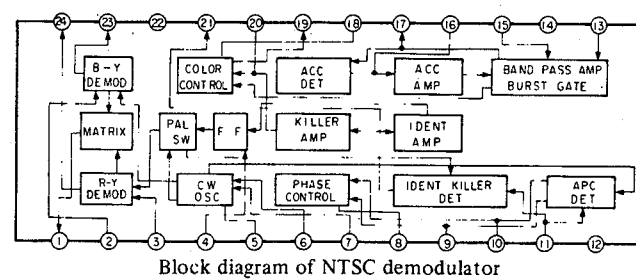
### 3-9-4. Phase Control Circuit

Anode voltage of D2 is applied by variable resistor RV2 and preset adjustment of phase is made by this variable resistor.

As above phase controlled chrominance signal is derived from emitter of transistor Q12 and burst signal in this signal is gated by IC (1/3). The gated burst signal is fed to the burst input terminal pin (11) of demodulator IC1.

### 3-9-5. NTSC Demodulator

The color difference signals demodulated by this IC are fed to low pass filter, where high frequency component is removed, then R-Y and B-Y color difference signals are obtained.



**Figure 16**

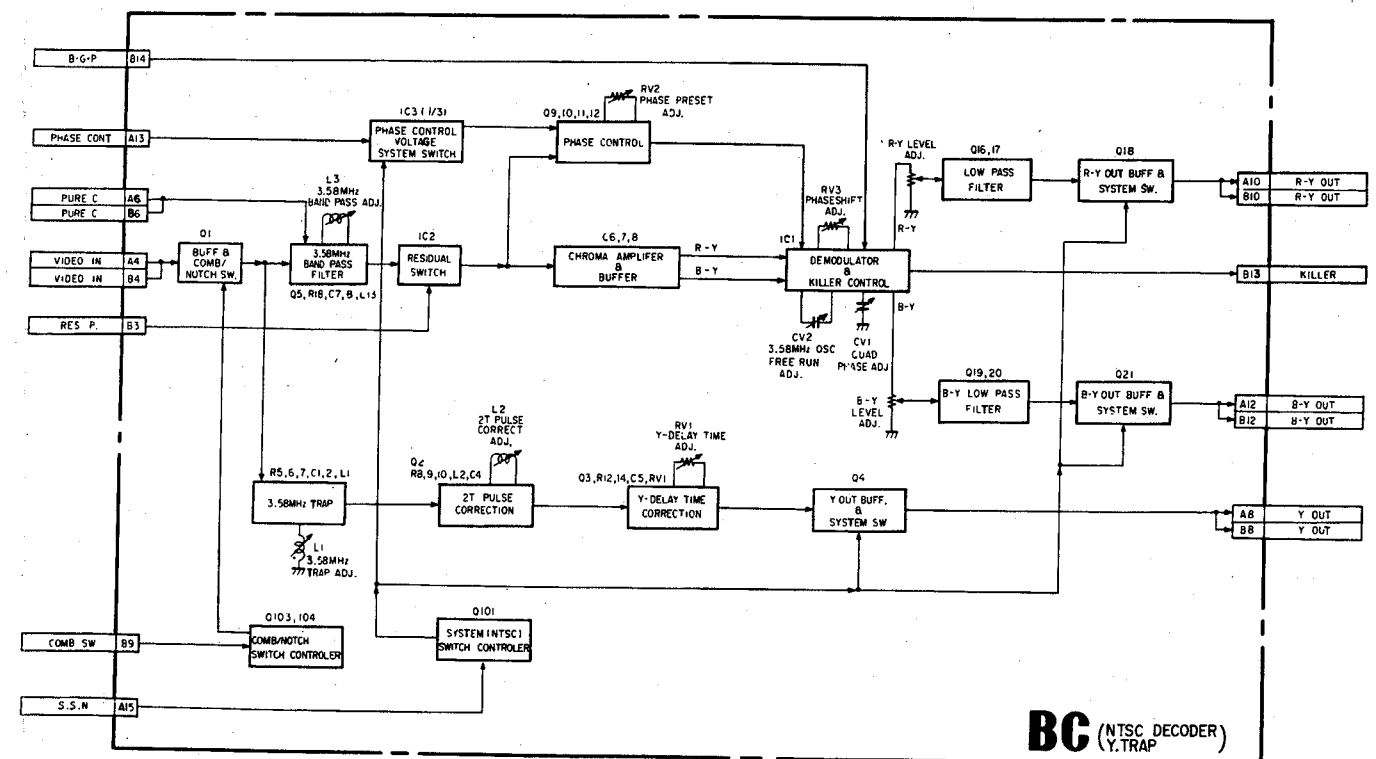
### 3-9-6. 3.58MHz Trap Circuit, Phase Compensation, Y Delay Correction Circuit

Y signal compensated phase delay is fed to Y-delay circuit. In this circuit Luminance/Chrominance time error is compensated by delay

### 3-9-7. Color Standard Selector

When NTSC system is not selected by the COLOR STANDARD SELECTOR in the right side drawer, transistor Q101 is cut off and +12V line power source is not supplied to the demodulator circuit.

### BLOCK DIAGRAM OF BC BOARD



(BVM-1415P ONLY)

### 3-10.PAL DEMODULATOR, Y TRAP CIRCUIT (BD BOARD)

The composite video signal (PAL) supplied from BA board is fed to transistor Q1 (buffer), then is supplied to the 4.43 MHz trap circuit with Y signal and to band pass filter with chrominance signal.

#### 3-10-1.Chroma Band Pass Filter

The composite video signal obtained from at the emitter of transistor Q1 is fed to the Band pass filter composed of resistor R12, capacitor C7, C8, inductor L3 and transistor Q5.

The center frequency of this filter is adjusted to the subcarrier frequency (4.43 MHz) by L3, and chrominance signal is derived from Q5.

#### 3-10-2.Residual SW Circuit

The chrominance signal derived at transistor Q5 is fed to analog switcher IC2.

When switch S1 on BJ board is set to ON position, residual pulse which has almost same phase as H sync is fed to control terminal of analog switcher (pin ③ of IC2) and screening is performed during H sync period.

When switch S1 on BJ board is set to OFF position, Low level signal (0V DC) is fed to control terminal and screening action is not performed. Thus residual switch circuit does not activate.

When there is residual subcarrier in the video signal, clamp level of color difference signal changes by turning switch S1 ON/OFF and therefore residual subcarrier can be checked on the picture as a color shift.

#### 3-10-3.Chroma Amplifier Circuit

The chrominance signal from residual switch circuit (IC2 pin ④) is fed to chroma amplifier circuit (Q19, Q36).

After the chroma signal is amplified by the inversion amplifier (gain: 1X), it is voltage divided by resistors R400 and R314 and then input to the R-Y input terminal (IC1, pin ③) and B-Y input terminal (IC1, pin ②) of the following demodulator circuit via the buffer (Q38).

#### 3-10-4.Phase Control Circuit

The chrominance signal from residual switch is also fed to phase control circuit (Q6, Q7, Q8, Q9, D12).

In this circuit, a variable capacitance diode (D10) is used to control the phase of color burst signal.

Anode voltage of D10 is applied by variable resistor RV8 and preset adjustment of phase is made by this variable resistor.

When the PHASE control on the right side of the front panel is turned, DC level of phase control signal (board terminal A13) changes and this phase control signal is fed to the cathode of D10 via analog switcher (IC5). In this way, Burst phase of chrominance signal is controlled according to the DC level of the phase control signal.

When PAL-D is selected with the PAL switch inside the right side drawer, between pins ③ and ④ of IC5 becomes conductive and phase control becomes dependent on RV7, disabling the Phase Control of the right side front panel.

Analog switcher IC5 (1/3) activates to make short-circuit between input terminal pin ③ or ⑤ and output terminal pin ④, only when COLOR STANDARD SELECTOR in the right side of drawer is selected to PAL and otherwise pin ⑤ kept open circuit.

As above phase controlled chrominance signal is derived from collector of transistor Q9 and burst signal in this signal is gated by IC6. The gated burst signal is fed to the burst input terminal pin ⑪ of demodulator IC1.

#### 3-10-5.PAL Demodulator

Block diagram of IC used for PAL demodulator is shown in Figure 1. This IC is designed for use of NTSC demodulator.

When chrominance signal is fed to pin ② and pin ③, color burst signal to pin ⑪ and Burst Gate Pulse (B.G.P.) to pin ⑬, R-Y and B-Y color difference signals are obtained at output terminals pin ⑫ and pin ⑭.

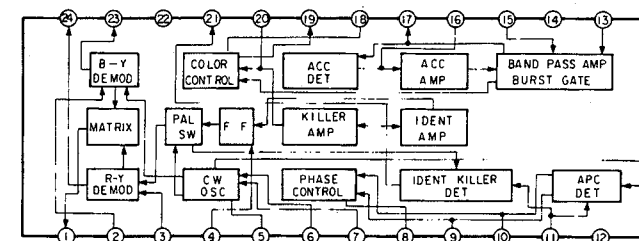
The demodulation axes of this demodulator are R-Y axis and B-Y axis. Variable capacitor CV1 is adjusted so that the phase angles between them are 90°.

Local oscillator (4.43 MHz) is formed by CW oscillator in IC1 connected to the terminal pin ⑤, ⑥, ⑦, ⑧ and external circuit.

The variable capacitor CV2 is adjusted so that the free run frequency may be subcarrier frequency 4.433619 MHz.

Also APC (Automatic Phase Control) circuit is formed by APC section in IC1 connected to the terminal pin ⑨ and ⑩ local oscillator is controlled by APC circuit.

The color difference signals demodulated by this IC are fed to low pass filter, where high frequency component is removed, then R-Y and B-Y color difference signals are obtained.



Block diagram of PAL demodulator

Figure 17

#### 3-10-6. PAL-D Matrix and PAL S/D Switching Circuit

This circuit is further divided into circuits for the R-Y and B-Y signals, but the operation of both circuits is the same. So only the R-Y one will be explained.

R-Y signals input from the demodulator circuit are input to Q20 (BUFF) and Q21 (BUFF).

The signals input to Q21 are then input to pin ② of the analog switcher (IC5). When PAL S has been selected, between pins ② and ⑬ becomes conductive and the signals are supplied to the following circuit via Q33 (BUFF).

The signals input to Q20 are formed by IC7 and Q18.

Bias is controlled by a clamp circuit and is input to pin ⑮ of the 1H delay line (IC3). The DC level of the input is adjusted to the optimum value by using RV9.

IC3, driven by the 10.64 MHz clock signal generated by the clock generator circuit configured with XZ, Q34 and Q35, delays the input signal by 1H cycle and outputs it from pin ⑪.

The high frequency component of the signal thus output is removed by the low-pass filter configured with Q22 and Q23, after which the signal is input to the following PAL-D matrix circuit.

The PAL-D matrix circuit is configured with R100, R101 and Q24. The signal that was not delayed is input through R100 while the 1H delayed signal is input through R101 at a ratio of 1/2.

The PAL-D signal added to the base of Q24 is obtained from its emitter. The signal obtained from the Q24 emitter is input to pin ① of IC5. When PAL-D is selected, between pins ① and ⑬ becomes conductive and the signal is supplied to the following circuit via Q33 (BUFF).

#### 3-10-7. 4.43 MHz Trap Circuit, Phase Compensation, Y Delay Correction Circuit

The composite video signal from the emitter of transistor Q1 is fed to 4.43 MHz trap circuit composed of resistor R5, R6, R7, capacitor C1, C2 and inductor L1.

Adjustment of L1 is made so that the resonance frequency of this trap circuit should be subcarrier frequency.

Y (Luminance) signal removed subcarrier is obtained at output terminal of the trap circuit and is fed to the phase compensation circuit. (Transistor Q2, resistor R8, R9 R10, inductor L2 capacitor C4)

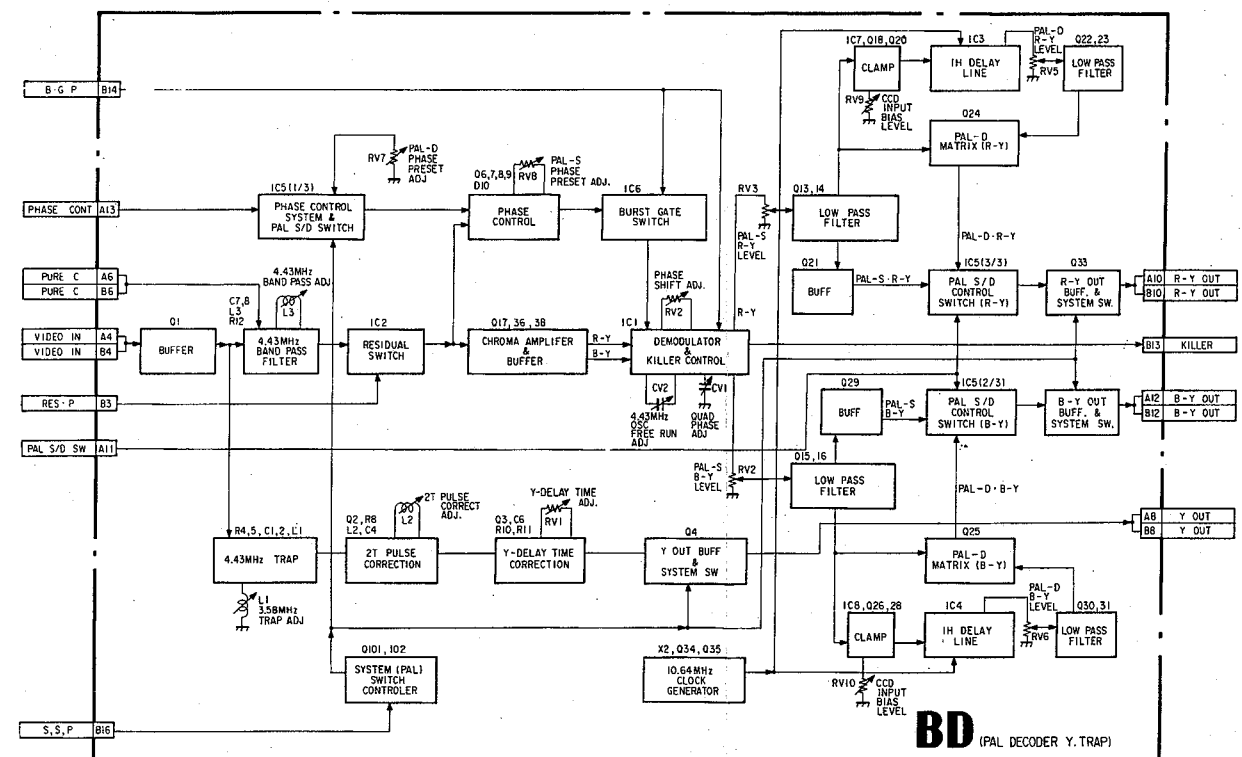
This circuit compensates phase delay of the signal at high frequency due to the trap circuit.

Y signal compensated phase delay is fed to Y-delay circuit. In this circuit Luminance/Chrominance time error is compensated by delay line.

#### 3-10-8. Color Standard Selector

When PAL system is not selected by the COLOR STANDARD SELECTOR in the right side drawer, transistor Q101, Q102 are cut off and ±12V line power source is not supplied to the demodulator circuit.

#### BLOCK DIAGRAM OF BD (PAL) BOARD



(BVM-1415PM ONLY)

### 3-11. PAL-M DEMODULATOR, Y TRAP CIRCUIT (BM BOARD)

The composite video signal supplied from BA board is fed to transistor Q1 (buffer), then is supplied to the 3.58 MHz trap circuit with Y signal and to band pass filter with chrominance signal.

#### 3-11-1. Chroma Band Pass Filter

The composite video signal obtained from at the emitter of transistor Q1 is fed to the Band pass filter composed of resistor R12, capacitor C7, C8, inductor L3 and transistor Q5. The center frequency of this filter is adjusted to the subcarrier frequency (3.58 MHz) by L3, and chrominance signal is derived from Q5.

#### 3-11-2. Residual SW Circuit

The chrominance signal derived at transistor Q5 is fed to analog switcher IC2. When switch S1 on BJ board is set to ON position, residual pulse which has almost same phase as H sync is fed to control terminal of analog switcher (pin ③ of IC2) and screening is performed during H sync period. When switch S1 on BJ board is set to OFF position, Low level signal (0V DC) is fed to control terminal and screening action is not performed. Thus residual switch circuit does not activate. When there is residual subcarrier in the video signal, clamp level of color difference signal changes by turning switch S1 ON/OFF and therefore residual subcarrier can be checked on the picture as a color shift.

#### 3-11-3. Chroma Amplifier Circuit

The chrominance signal from residual switch circuit (IC2 pin ④) is fed to chroma amplifier circuit (Q19, Q36). After the chroma signal is amplified by the inversion amplifier (gain: 1X), it is voltage divided by resistors R400 and R314 and then input to the R-Y input terminal (IC1, pin ③) and B-Y input terminal (IC1, pin ②) of the following demodulator circuit via the buffer (Q38).

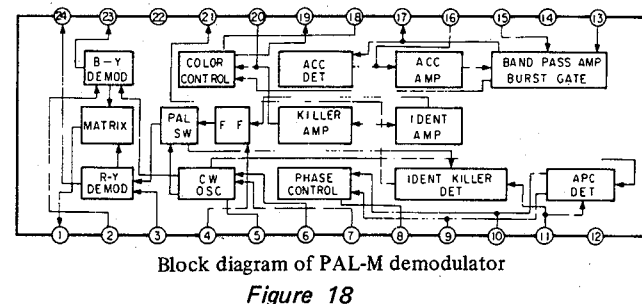
#### 3-11-4. Phase Control Circuit

The chrominance signal from residual switch is also fed to phase control circuit (Q6, Q7, Q8, Q9, D12). In this circuit, a variable capacitance diode (D10) is used to control the phase of color burst signal. Anode voltage of D10 is applied by variable resistor RV8 and preset adjustment of phase is made by this variable resistor. When the PHASE control on the right side of the front panel is turned, DC level of phase control signal (board terminal A13) changes and this phase control signal is fed to the cathode of D10 via analog switcher (IC5). In this way, Burst phase of chrominance signal is controlled according to the DC level of the phase control signal. When PAL-D is selected with the PAL switch inside the right side drawer, between pins ③ and ④ of IC5 becomes conductive and phase control becomes dependent on RV7, disabling the Phase Control of the right side front panel.

Analog switcher IC5 (1/3) activates to make short-circuit between input terminal pin ③ or ⑤ and output terminal pin ④, only when COLOR STANDARD SELECTOR in the right side of drawer is selected to PAL and otherwise pin ⑤ kept open circuit. As above phase controlled chrominance signal is derived from collector of transistor Q9 and burst signal in this signal is gated by IC6. The gated burst signal is fed to the burst input terminal pin ⑪ of demodulator IC1.

#### 3-11-5. PAL-M Demodulator

Block diagram of IC used for PAL demodulator is shown in Figure 1. This IC is designed for use of NTSC demodulator. When chrominance signal is fed to pin ② and pin ③, color burst signal to pin ⑪ and Burst Gate Pulse (B.G.P.) to pin ⑬, R-Y and B-Y color difference signals are obtained at output terminals pin ②③ and pin ②④. The demodulation axes of this demodulator are R-Y axis and B-Y axis. Variable capacitor CV1 is adjusted so that the phase angles between them are 90°. Local oscillator (3.58 MHz) is formed by CW oscillator in IC1 connected to the terminal pin ⑤, ⑥, ⑦, ⑧ and external circuit. The variable capacitor CV2 is adjusted so that the free run frequency may be subcarrier frequency 3.575611 MHz. Also APC (Automatic Phase Control) circuit is formed by APC section in IC1 connected to the terminal pin ⑨ and ⑩ local oscillator is controlled by APC circuit. The color difference signals demodulated by this IC are fed to low pass filter, where high frequency component is removed, then R-Y and B-Y color difference signals are obtained.



#### 3-11-6. PAL-D Matrix and PAL S/D Switching Circuit

This circuit is further divided into circuits for the R-Y and B-Y signals, but the operation of both circuits is the same. So only the R-Y one will be explained. R-Y signals input from the demodulator circuit are input to Q20 (BUFF) and Q21 (BUFF). The signals input to Q21 are then input to pin ② of the analog switcher (IC5). When PAL S has been selected, between pins ② and ⑤ becomes conductive and the signals are supplied to the following circuit via Q33 (BUFF). The signals input to Q20 are formed by IC7 and Q18. Bias is controlled by a clamp circuit and is input to pin ⑮ of the 1H delay line (IC3). The DC level of the input is adjusted to the optimum value by using RV9. IC3, driven by the 10.64 MHz clock signal generated by the clock generator circuit configured with XZ, Q34 and Q35, delays the input signal by 1H cycle and outputs it from pin ⑪.

The high frequency component of the signal thus output is removed by the low-pass filter configured with Q22 and Q23, after which the signal is input to the following PAL-D matrix circuit. The PAL-D matrix circuit is configured with R100, R101 and Q24. The signal that was not delayed is input through R100 while the 1H delayed signal is input through R101 at a ratio of 1/2. The PAL-D signal added to the base of Q24 is obtained from its emitter. The signal obtained from the Q24 emitter is input to pin ① of IC5. When PAL-D is selected, between pins ① and ⑤ becomes conductive and the signal is supplied to the following circuit via Q33 (BUFF).

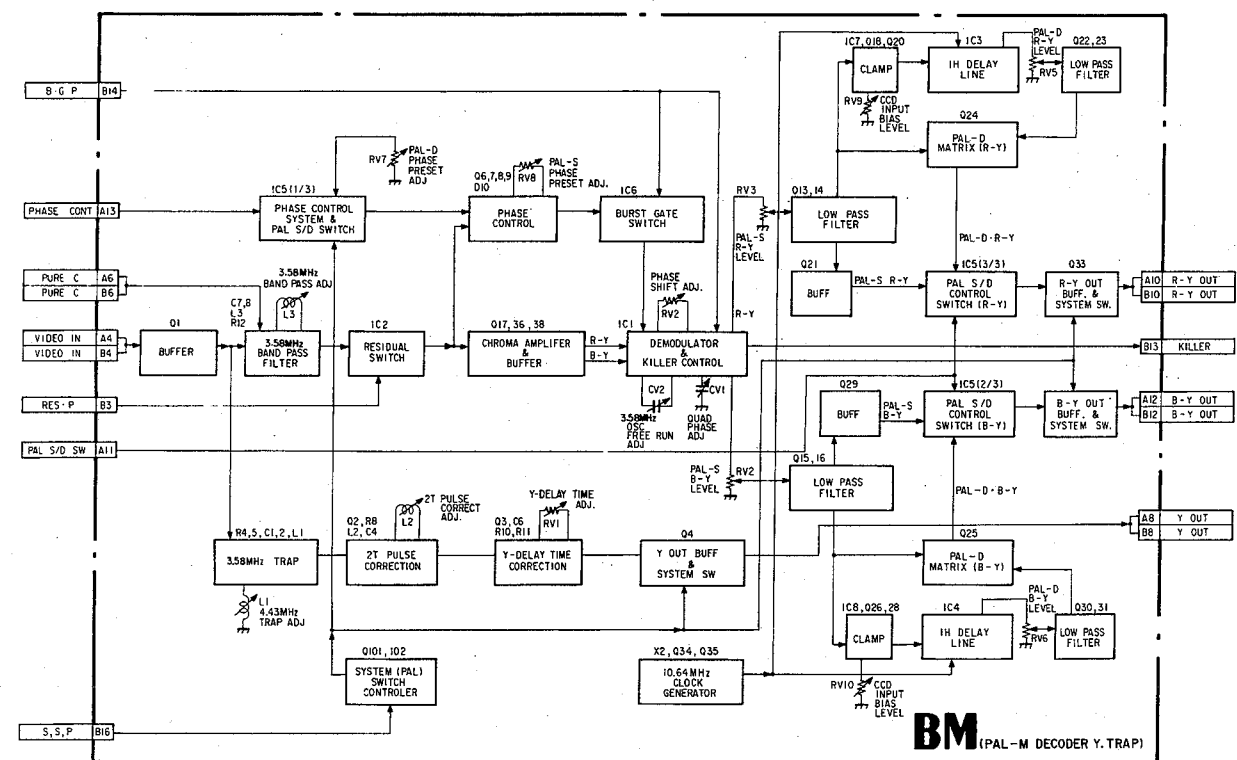
#### 3-11-7. 3.58 MHz Trap Circuit, Phase Compensation, Y Delay Correction Circuit

The composite video signal from the emitter of transistor Q1 is fed to 3.58 MHz trap circuit composed of resistor R5, R6, R7, capacitor C1, C2 and inductor L1. Adjustment of L1 is made so that the resonance frequency of this trap circuit should be subcarrier frequency. Y (Luminance) signal removed subcarrier is obtained at output terminal of the trap circuit and is fed to the phase compensation circuit. (Transistor Q2, resistor R8, R9 R10, inductor L2 capacitor C4) This circuit compensates phase delay of the signal at high frequency due to the trap circuit. Y signal compensated phase delay is fed to Y-delay circuit. In this circuit Luminance/Chrominance time error is compensated by delay line.

#### 3-11-8. Color Standard Selector

When PAL system is not selected by the COLOR STANDARD SELECTOR in the right side drawer, transistor Q101, Q102 are cut off and ±12V line power source is not supplied to the demodulator circuit.

#### BLOCK DIAGRAM OF BM (PAL-M) BOARD



3-12. VERTICAL DEFLECTION OUTPUT CIRCUIT  
CONVERGENCE OUTPUT CIRCUIT  
(EB BOARD)

3-12-1. EB BOARD

Vertical Deflection Output Circuit

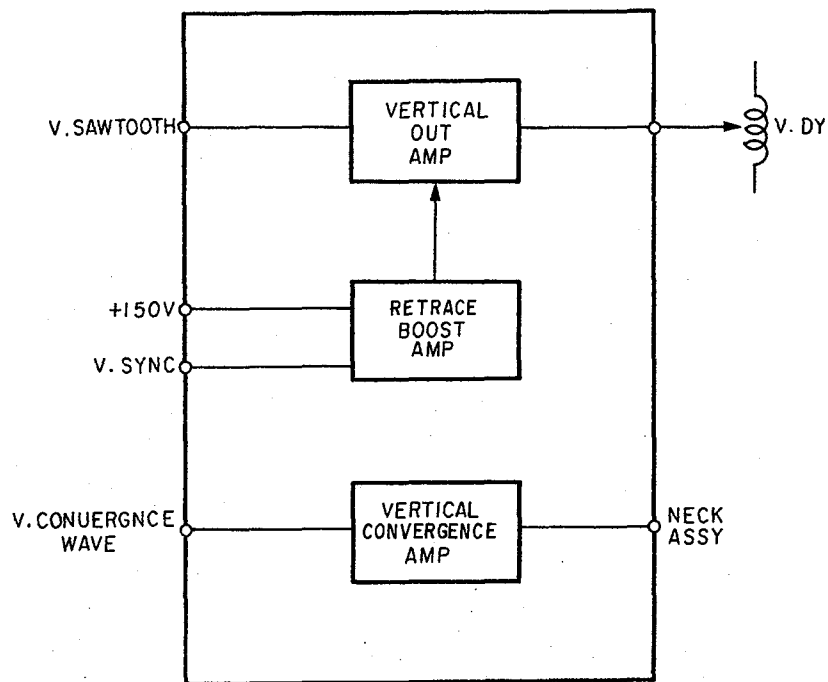
The vertical deflection output circuit consists of the SEPP AMP, directly connected to DC power and composed of Q1 to Q5, and the retrace pulse voltage boost-up circuit, composed of Q7 and Q8.

This SEPP AMP receives, as an input, the sawtooth wave voltage (added with the T&B pincushion compensating voltage and the vertical linearity compensating voltage) generated at the D board.

Since the SEPP AMP is directly connected to the load (V.DY), the V.CENT circuit needs only DC current supplied to V sawtooth from  $\pm$  power supply.

The boost-up circuit is turned on by the V.D signal and supplies energy to the output circuit during the vertical retrace period.

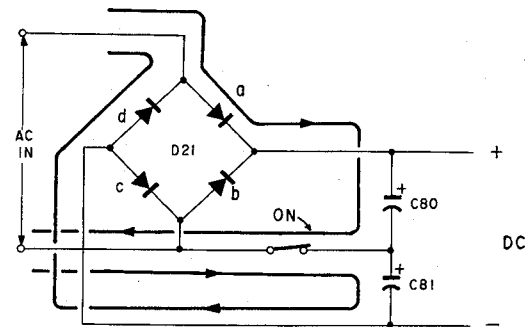
BLOCK DIAGRAM OF EB BOARD



### 3-13. POWER SUPPLY CIRCUIT (GA, GB BOARDS)

#### 3-13-1. AC Power Supply, Rectifier Circuit

Voltage selector located at the rear side of the unit should be selected to the local line voltage (AC 100/120V or 220/240V). In case of AC 100/120V selected by voltage selector, rectifier D21 capacitors C80 and C81 operate as a double multiple rectifier. See Figure 18(a). In case of AC 220/240V selected by voltage selector, rectifier D21 capacitors C80 and C81 operate as a full-wave rectifier. See Figure 18(b).



AC IN Passes through D21d and charges to C81.

Passes through D21a and charges to C80.

Figure 18(a)

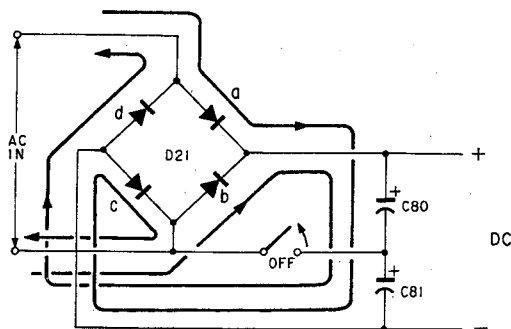


Figure 18(b)

#### 3-13-2. Degauss Circuit

There are 2 posistors (PTH1, PTH2) in the degaussing circuit. One is used for AC 100/120V operation, the other is for AC 220/240V operation, these posistors are switched by voltage selector. This degaussing circuit is turned ON and OFF by using Relay (RY1) automatically. When power is turned ON, Automatic degaussing starts to work and a few seconds later stops automatically. Also Manual degaussing is available if necessary after a few minutes power is turned on when posistor (PTH1 or PTH2) gets cool down. This manual degaussing is operated by a push of button (Degauss Switch) at the left of the front panel. When degaussing circuit starts to work, Q11 transistor turns on by time constant circuit composed of resistors R88, 91 and capacitor C74. Q11 drives Q12 transistor. Relay (RY1) is driven by Q12. Time constant circuit keeps degaussing circuit to activate for several seconds until degaussing is finished.

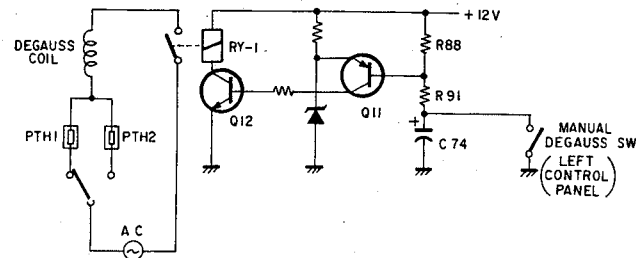


Figure 19

#### 3-13-3. Starter Circuit

Blocking oscillator composed of integrated circuit IC1 and transformer T4 operates when power is turned on. DC voltage obtained by diode D7 and capacitor C57 as a rectifier at the secondary circuit of T4 is supplied to IC2 and IC3, when AC voltage is higher than 50 ~ 70V (voltage selector at 100/120V position). Then power supply regulator starts to work and +15V line power supply is provided to IC2 and IC3 via diode D20, also voltage from T4 stops providing power supply to IC2 and IC3 because blocking oscillator is shut down by voltage generated at primary windings of SRT (Switching Regulator Transformer).

#### 3-13-4. Switching Regulator Circuit

Block diagram is shown in Figure 20. This is half bridge type of switching regulator in this model.

Following Description is the Theory of Half-Bridge Switching Regulator.

DC voltage  $E_{IN}$  rectified from AC voltage in AC power rectifier section is divided by capacitor C1 and C2. C1 and C2 have almost same value. Q1 (contains 2 transistors) operates as a switch driven by PWM modulated pulse via T2 (Drive Transformer). Switching current flows through primary windings of T1 (SRT) by switching transistor Q1 via T3 (Current Transformer). Thus output voltages are generated at secondary windings of T1.

Practical Circuit Used in this Model

There are 2 switching regulators in this power supply. One is for low voltage power supply,  $\pm 15V$ ,  $\pm 18V$  and  $+5V$ . The other is for high voltage  $\pm 150V$  power supply.

Low voltages are generated by IC2, T1, T2, T3 and Q1.

High voltages are generated by IC3, T6, T7 and Q2

Refer to block diagram

Current Transformer T3 and T7 detects excess current in transistor Q1 and Q2 for the protection of damage.

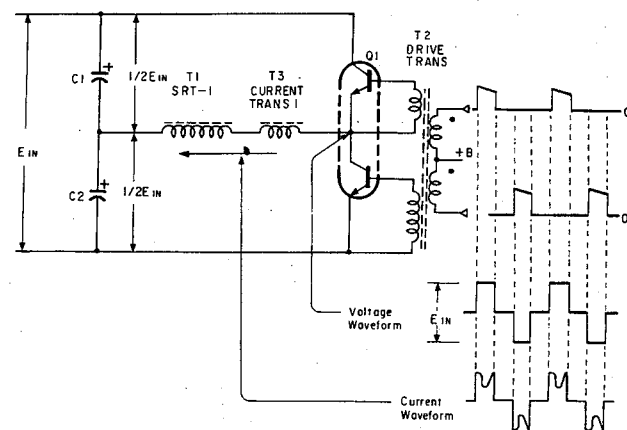


Figure 20

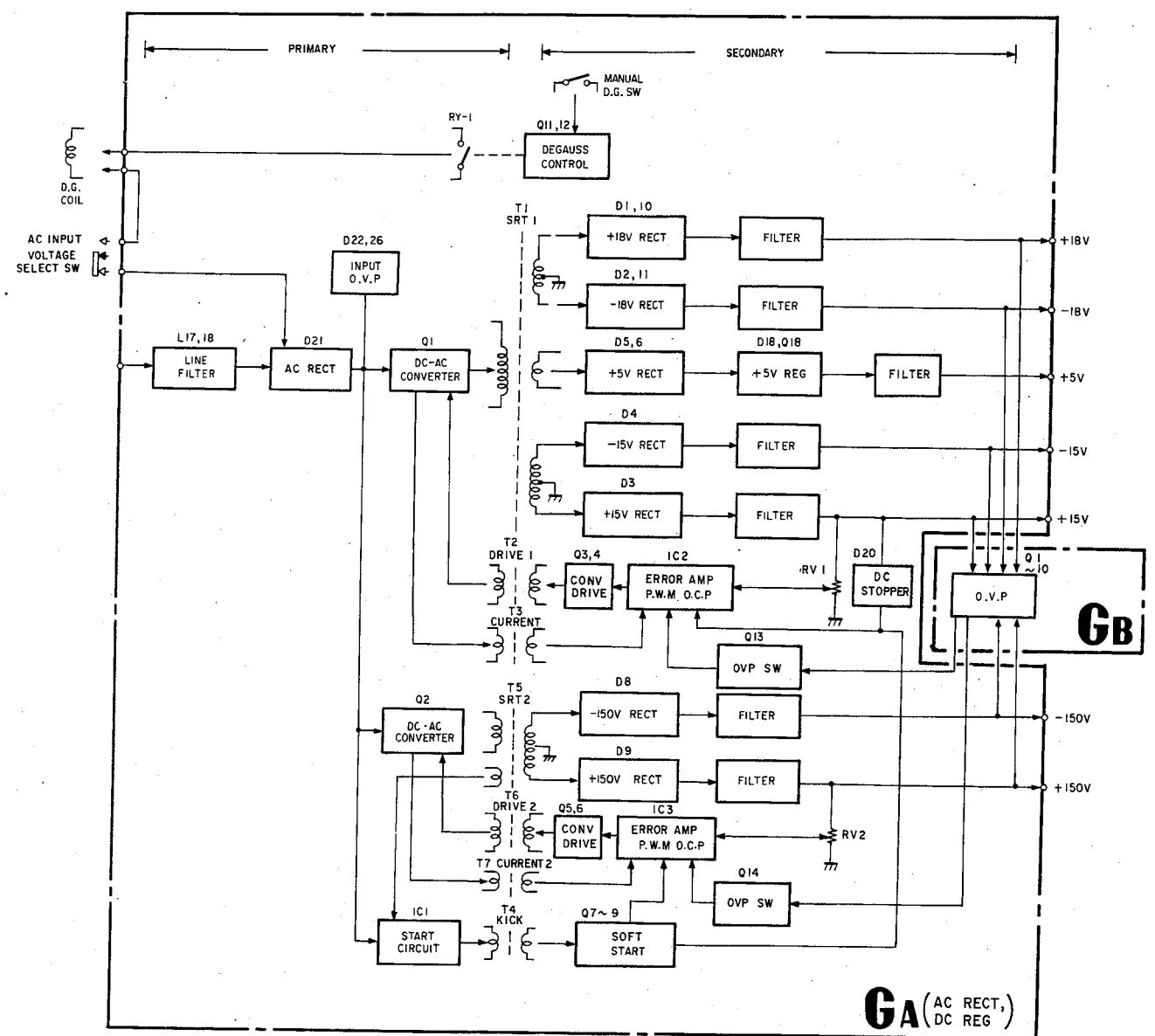
#### 3-13-5. Over Voltage Protector

Daughter board GB is mounted in mother board GA.

GB board works for over voltage protection.

When output voltage gets higher value than predetermined value, over voltage protector activates to prevent damage of unit.

### BLOCK DIAGRAM OF GA, GB BOARD



### 3-14. D BOARD

#### • Waveform Generation circuit (IC2, 7, 8, 9, 11, 18, 24, 25)

IC2 is a waveform generator. With the input of both horizontal and vertical sync signals, this IC generates the following signals:

- H rate saw tooth waveform signal (HS)
- H rate parabolic waveform signal (HP)
- V rate saw tooth waveform signal (VS)
- V rate parabolic waveform signal (VP)
- Modulated waveform signal
- H saw  $\times$  V saw (HS  $\times$  VS)
- H saw  $\times$  V parabola (HS  $\times$  VP)
- H parabola  $\times$  V saw (HP  $\times$  VS)
- H parabola  $\times$  V parabola (HP  $\times$  VP)
- H.SW PULSE, V.SW PULSE

H.SW and V.SW pulses are those which rise just in the middle of the trace period and fall in the retrace period.

#### • Scan Switching circuit (IC3, 4, 7, 24)

In the scan switching circuit, NORMAL, UNDER or SET-UP scanning is performed.

In H.SAW GEN. circuit, the H rate saw wave is output by the integrator of IC13 using the H.SW pulses from IC2 as reset pulses. The H rate saw thus generated is delayed about 1/2H as compared with that of the IC2.

#### • H.BLK.GEN., HV.DRIVE GEN. circuit (IC14, 15)

In the H.BLK.GEN. circuit, the H.BLK.P required for horizontal blanking is generated from the H.SAW waveform signal which is output signal of IC13. The HV.DRIVE GEN. is the same. In the H.DELAY and H.PHASE circuits, like H.BLK.GEN., the D.AFC.P is output by comparing the H.SAW output signals of IC13. Further, this circuit performs H. PHASE and H.DELAY by not changing the pulse width of D.AFC.P but changing only the position.

#### • H.OSC, H.AFC circuits (IC18, 19, Q10)

IC19 is an IC which incorporates the H.OSC and H.AFC circuits. In this IC, the frequency and phase of H.OSC are controlled by comparing the phases of D.AFC.P and H.SYNC. This unit can vary the AFC time constant by the AFC.SW.

#### • SIN.GEN., COS.GEN. circuits (IC5, 6)

In the SIN.GEN. and COS.GEN. circuits, the SIN approximate wave is output by integrating the V rate parabola once and the COS approximate wave is output by integrating it twice.

#### • H.WIDTH circuit (IC3, 11)

In the H.WIDTH circuit, the correction waveforms such as SIDE PIN, SIDE PIN TILT, H.WIDTH, etc. are output by adding VP, VS, H, SIZE, etc. (H.WIDTH)

#### • H.LIN circuit (IC10)

In the H.LIN circuit, correction waveforms such as H.LIN.GAIN, H.LIN.BALANCE, etc. are output by adding HP, HS, etc. (H.LIN)

#### • V.SAW circuit (IC10)

In the V.SAW circuit, the correction waveforms such as V cycle saw wave, V.LIN. GAIN, V.LIN. BALANCE, V GEN.T.X BOW, TOP BOTTOM PIN, etc. are output by adding VS, DC, V.SIN, VP, HS, HS  $\times$  VS, etc. (V.SAW)

#### • H.CENT circuit (IC16)

In the H.CENT circuit, the correction waveforms of H CENT and Y BOW are output by adding VP and DC. (H.CENT)

#### • X.CONV circuit (IC8, 12, Q6)

In the X.CONV circuit, the correction waveform of vertical misconvergence is output by adding VP and DC which are generated separately in upper side and lower side of the picture screen.

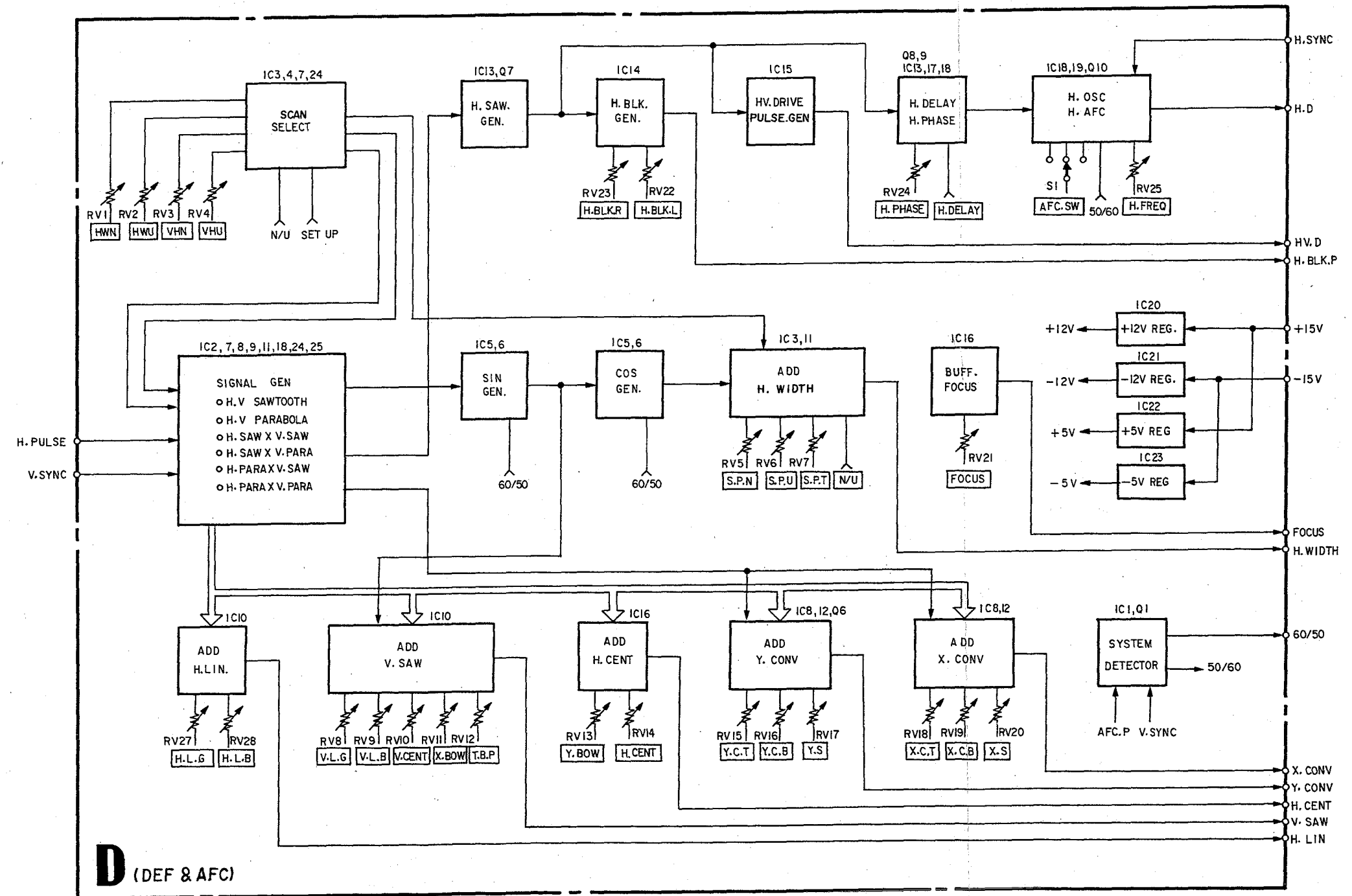
#### • Y.CONV circuit (IC8, 12)

In the Y.CONV circuit, the correction waveform of horizontal misconvergence is output by adding VP and DC which are generated separately in upper side and lower side of the picture screen.

#### • System Detector circuit (IC1, Q1)

With the input at both horizontal and vertical sync signals IC1 distinguishes between 525/60 and 625/50.

BLOCK DIAGRAM OF D BOARD





### 3-15. HORIZONTAL DEFLECTION OUTPUT CIRCUIT AND HIGH VOLTAGE REGULATOR CIRCUIT (EA BLOCK)

#### 3-15-1. Horizontal Deflection Output Circuit

The horizontal deflection output circuit controls H out of Q11, driving T2 at Q10 by the H drive pulse generated on the board D.

The power supply circuit to H out improves the power supply efficiency using  $\pm 150\text{V}$  and DC-DC converter with IC1 and Q7. IC1 consists of the error amplifier and the P.W.M. circuit. IC1, being supplied with the side pin-cushion correction waveform and the H. width adjusting voltage from the board D, controls the DC-DC converter output.

#### 3-15-2. H. Center Adjusting Circuit

The H. center adjusting circuit, generating a  $\pm$  power source from the secondary output of T3 (H.O.T.), flows the correction current of the horizontal center position and Y bow bend to the horizontal deflection yoke.

#### 3-15-3. H. Linearity Correction Circuit

The H. LIN. circuit amplifies the H. LIN. correction waveform generated on the board D by the SEPP amplifiers of Q2 to Q5, and supplies these to the horizontal deflection yoke from the capacitor for S curve correction.

#### 3-15-4. High Voltage Regulator Circuit

The high voltage regulator of this unit uses the DC-DC converter type power supply circuit in order to reduce power consumption. In general, the movement of the high voltage regulator is as follows:

The high voltage regulator consists of Q16, Q18, IC3 (1/2), IC2 (IC for P.W.M. control) and HVR.

The detection voltage is obtained by directly dividing HV voltage with resistors in HVR.

IC2 compares this detection voltage with the reference voltage located outside IC2 (error amplification) and performs P.W.M. modulation. Q16 is driven by output of IC2 which is made PWM modulation and controls the voltage supplied to the FBT drive circuit (Q17, Q18, FBT).

The HV voltage is adjusted by changing the detection voltage. Since the detection voltage of HVR drops when the anode current is increasing and the high voltage drops, then the ON period of Q16 is widened.

As a result of this, as the peak current of the corrector current of Q18 increases, the energy which is stored in C68 via FBT is enlarged and the high voltage is regulated by increasing electric potential of C68.

When Q18 is turned off, a flyback pulse is generated by the synthesized resonance action by inductance of L.O.T, H.O.T and the C65, C66, then, the HV voltage is generated by transferred the flyback pulse to the secondary side. (See Figure)

#### 3-15-5. High Voltage Protector

The detection voltage for the high voltage protector is obtained by directly by dividing HV voltage with resistors in HVR.

For the high voltage protector circuit, when this detection voltage rises more than the reference voltage by the high voltage rise, output of the comparator IC4 (1/2) becomes high and the drive pulse of the high voltage converter is cut off by making D27 (SCR) gate on. Consequently, the high voltage output circuit is stopped.

Furthermore the threshold voltage for this protector is determined by not only the reference voltage obtained by zener diode but also the voltage obtained by ABL voltage (at 9 pin of FBT) in addition to the reference voltage.

#### 3-15-6. High Voltage Current Protector

The anode current is converted to the voltage by resistor R121 (EA board) in which the current flows in the secondary winding of FBT.

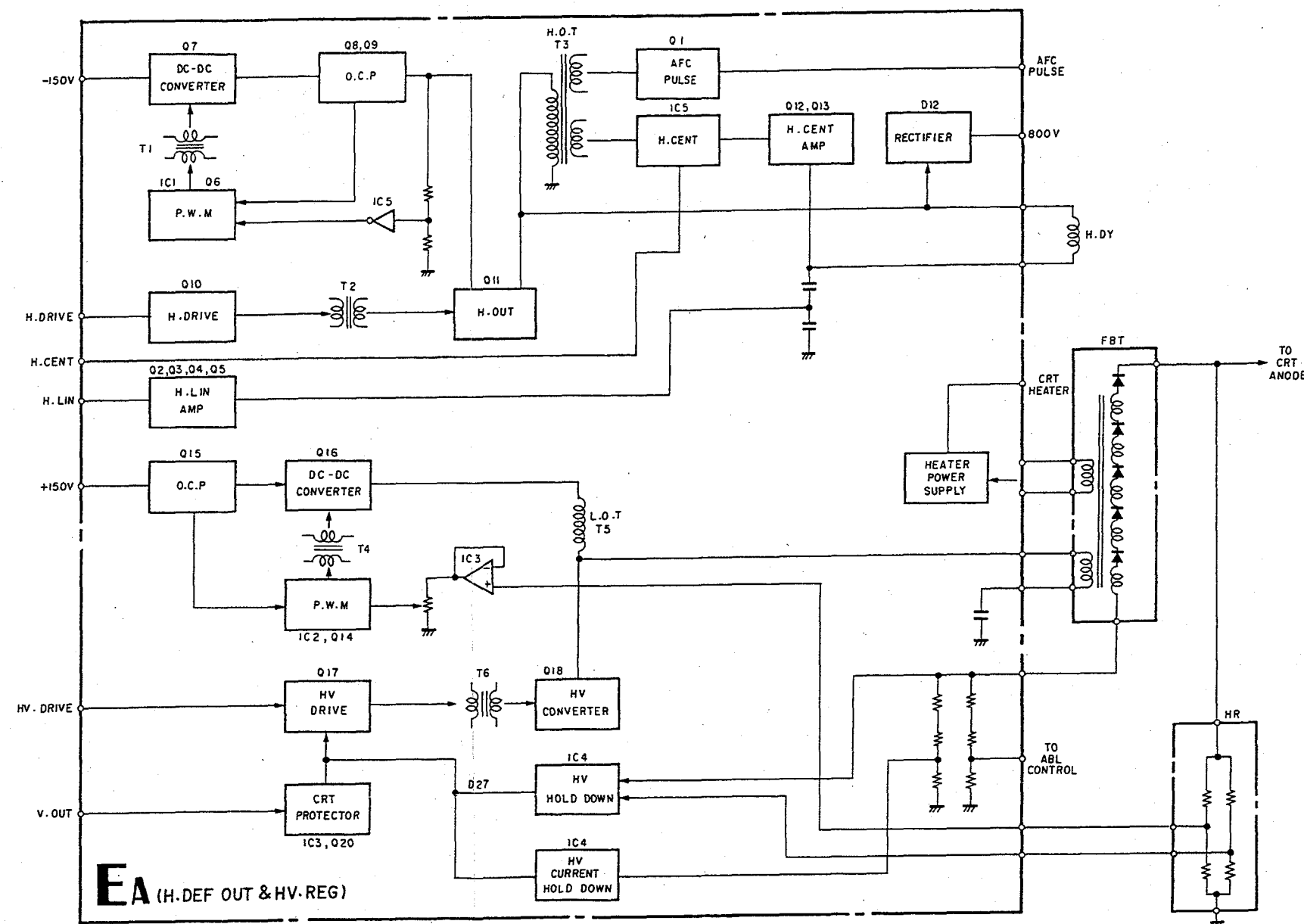
For the high voltage current protector, when the anode current increases extraordinarily, the output of comparator IC4 (2/2) becomes high and the drive pulse of the high voltage converter is cut off by making D27 (SCR) gate on. Consequently, the high voltage output circuit is stopped.

#### 3-15-7. CRT Protector

The CRT protector circuit is to prevent the CRT from burning when the vertical deflection circuit is stopped by some causes. For the CRT protector circuit, because the retrace pulse of V out disappears when the vertical deflection circuit is stopped, Q20 is turned off and the output of comparator IC3 (2/2) becomes high, then, with D27 (SCR) turned on to cut off the drive pulse of the high voltage converter circuit, the high voltage output circuit is stopped.

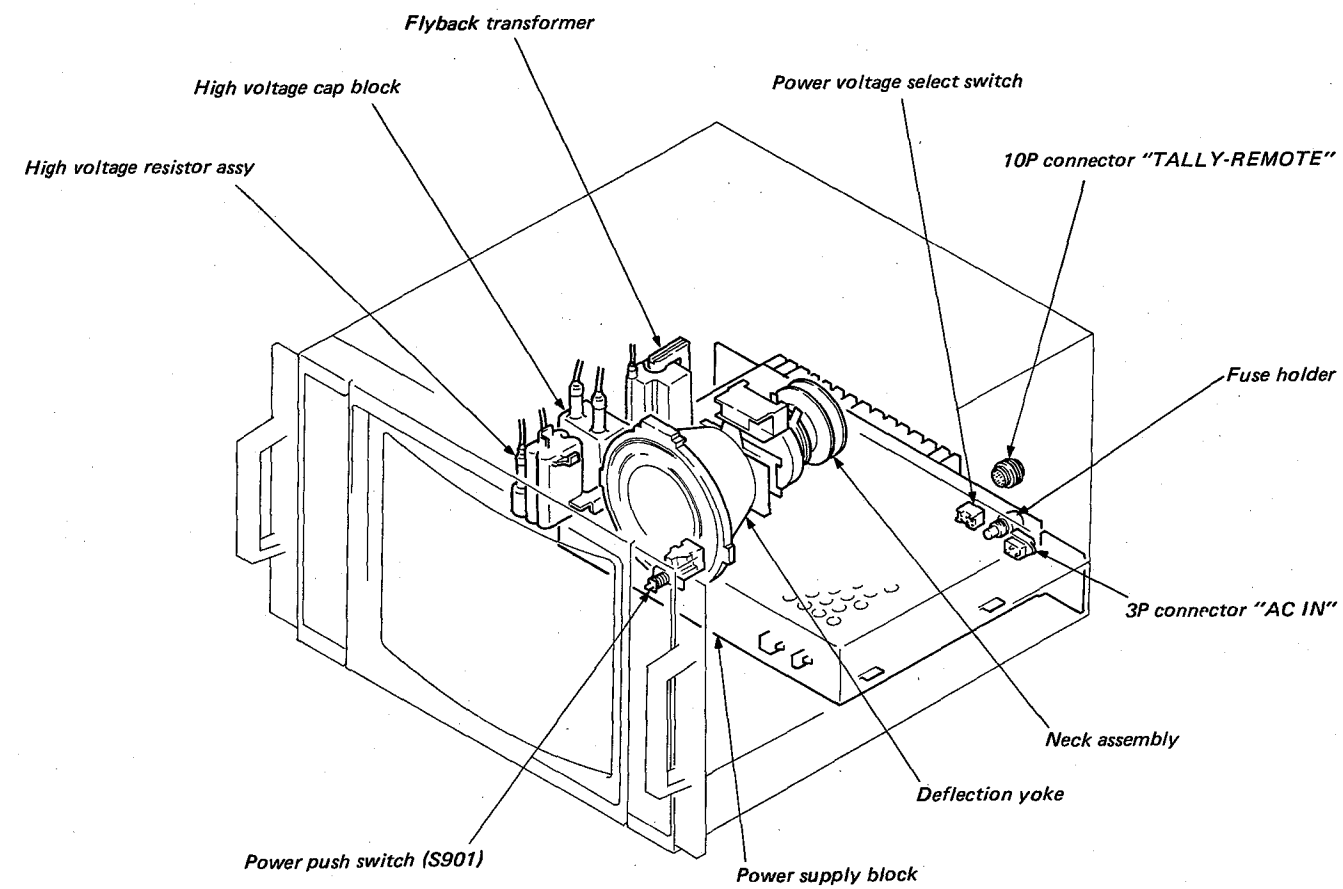
#### 3-15-8. CRT Heater Power Source

The CRT heater power source is supplied from the secondary winding of FBT.



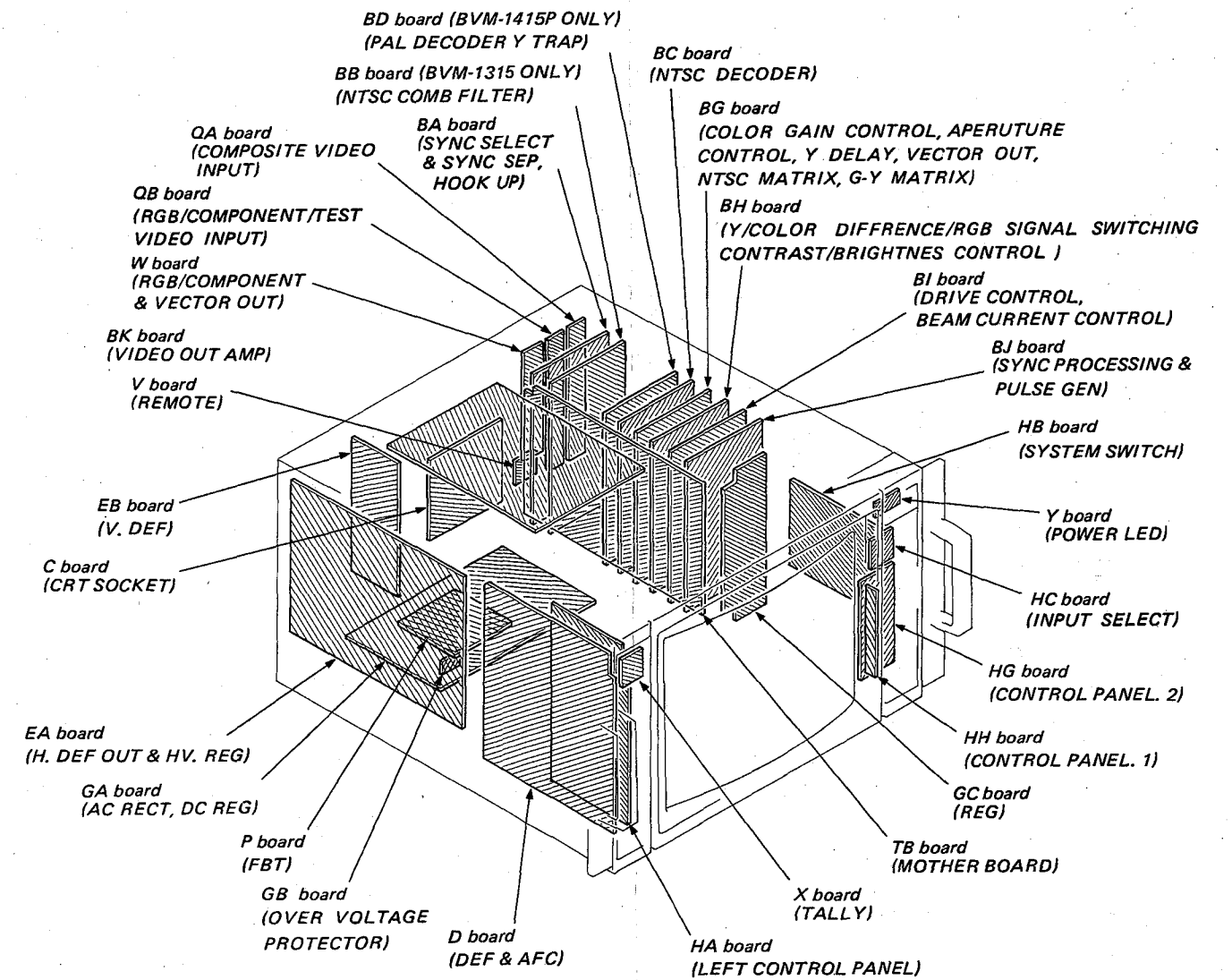
## SECTION 4 ADJUSTMENTS

### 4-1. INTERNAL VIEW



4-1

### 4-2. CIRCUIT BOARDS LOCATION

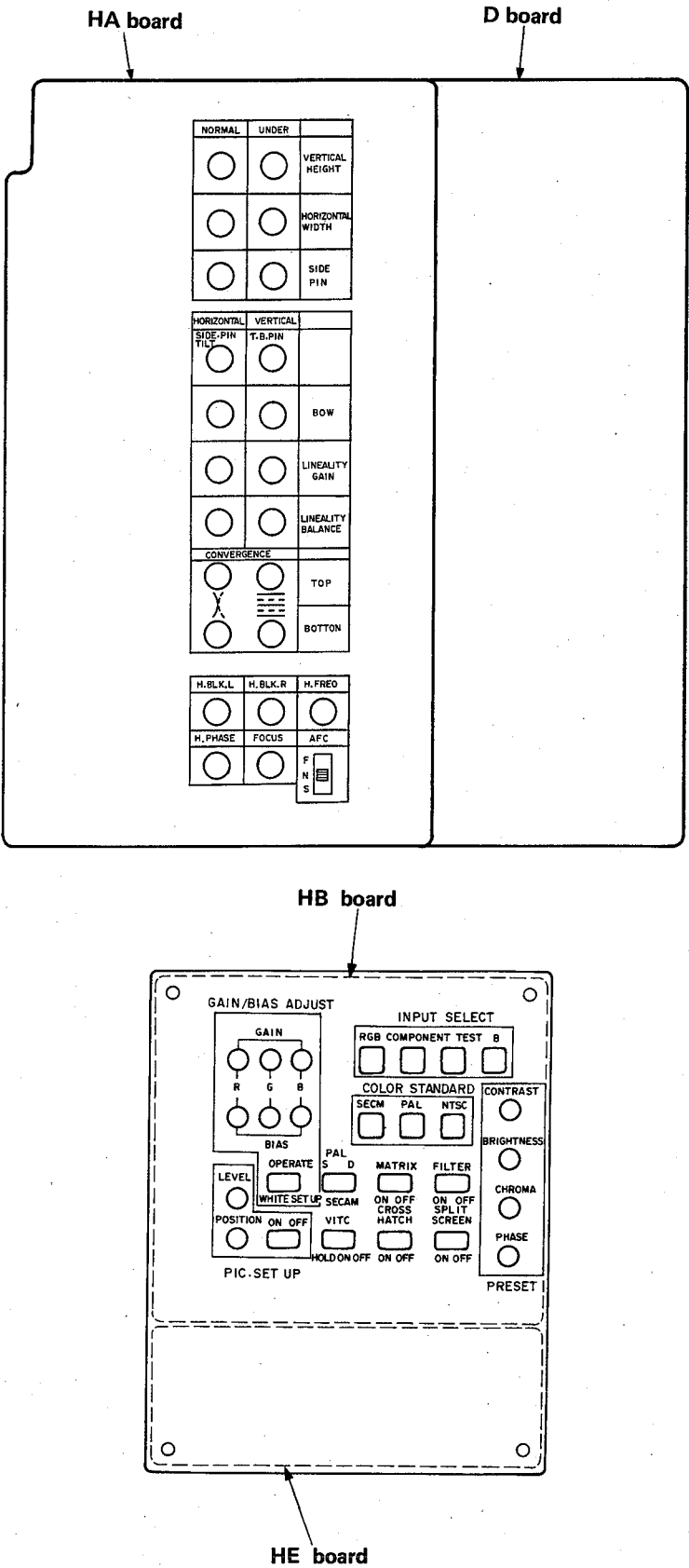


4-2

4-3. QUICK REFERENCE

SECTION \ BOARD	BA	BB	BC	BG	BH	BI	BJ	BK	BD/BM	D	EA
CIRCUIT DESCRIPTION	3-1	3-17	3-19	3-3	3-5	3-7 3-15	3-9	3-13 3-15	3-21 3-23	3-29	3-31
ADJUSTMENTS	4-21 4-25	4-47	4-31 4-35	4-21 4-27	4-21	4-16	4-19 4-30 4-44	4-45	4-55	4-70	4-14
BLOCK DIAGRAM	3-2	3-18	3-20	3-4	3-5	3-7	3-9	3-13	3-22 3-24	3-29	3-31
MOUNTING DIAGRAM	5-11	5-16	5-21	5-31	5-39	5-41	5-49	5-51	5-29	5-59	5-65
SCHEMATIC DIAGRAM	5-13	5-19	5-23	5-33	5-37	5-43	5-47	5-53	5-27	5-57	5-63
ELECTRICAL PARTS LIST	7-1	7-4	7-6	7-16	7-8	7-12	7-10	7-14	7-30	7-24	7-26
SECTION \ BOARD	EB	GA	GB	C	P	HA	HB	HC	HG	HH	X
CIRCUIT DESCRIPTION	3-25	3-27	3-27	—	—	—	—	—	—	—	—
ADJUSTMENTS	—	4-11	—	—	—	—	4-18 4-21	—	—	—	—
BLOCK DIAGRAM	3-25	3-28	3-28	—	3-36	—	—	—	—	—	—
MOUNTING DIAGRAM	5-67	5-71	5-73	5-67	5-67	5-75	5-74	5-76	5-76	5-76	5-76
SCHEMATIC DIAGRAM	5-64	5-69	5-70	5-64	5-64	5-78	5-77	5-77	5-77	5-77	5-78
ELECTRICAL PARTS LIST	7-23	7-19	7-22	7-22	7-18	7-28	7-28	7-28	7-29	7-29	7-29
SECTION \ BOARD	Y	GC	QA	V	W	QB	TB	Z	HE		
CIRCUIT DESCRIPTION	—	—	3-1	—	—	3-1	—	—	—		
ADJUSTMENTS	—	—	—	—	—	—	—	—	—		
BLOCK DIAGRAM	—	—	3-2	—	—	3-2	—	—	—		
MOUNTING DIAGRAM	5-76	5-81	5-81	5-82	5-81	5-81	5-85	5-87	—		
SCHEMATIC DIAGRAM	5-78	5-79	5-79	5-80	5-80	5-80	5-83	—	—		
ELECTRICAL PARTS LIST	7-29	7-19	7-19	7-23	7-28	7-19	7-1	7-29	7-28		

4-4. SUB CONTROL PANEL LOCATION



#### 4-5. SETUP ADJUSTMENT IN CASE OF PICTURE TUBE REPLACEMENT

When the picture tube has been replaced, make the following adjustments. Convergence and white balance are normally adjusted by POT's on the sub control panel.

(Refer to pages 4-6, 4-7 and 4-9)

##### [Jigs Tools and Measurement Equipment Required]

1. SIGNAL GENERATOR (TEKTRONIX 1410 Series)
2. COLOR ANALYZER
3. LUMINANCE METER

##### [Landing adjustment]

1. Connect signal generator and receive a white signal.
2. Set BRIGHTNESS and CONTRAST MANUAL switch to pre-set (□).
3. Face the CRT screen toward East (or West) and press the DEGAUSS switch.
4. Adjust the purity adjusting screw in the center.

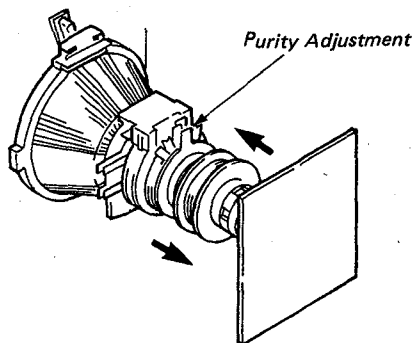


Fig. 1-1.

5. Slide DY (Deflection Yoke) as far forward as possible.
6. Set the neck assembly in the position shown in Fig. 1-2.

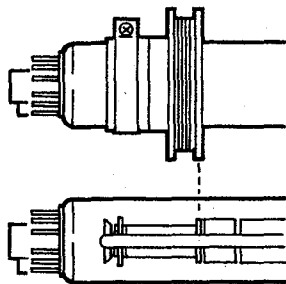


Fig. 1-2.

7. Set the screen to green only (R and B on the FRONT PANEL (L)) are in the IN position and G in the OUT position).
8. Adjust the purity magnet so that the center of screen becomes green as shown in Fig. 1-3.

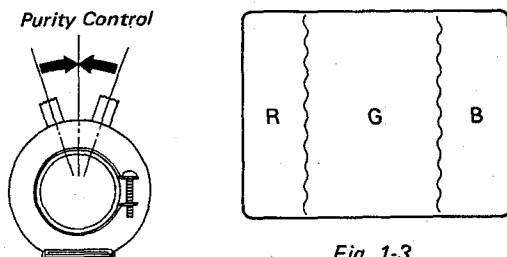


Fig. 1-3.

9. Slide DY back for uniform green raster.
10. Make the screen red only (G and B on the FRONT PANEL (L)) are in the IN position and R in the OUT position) and check landing.
11. Make the screen blue only (R and G on the FRONT PANEL (L)) are in the IN position and B in the OUT position) and check landing.
12. Adjust DY tilt and tighten DY set-screw.
13. Secure the DY with the spacers. (Fig. 1-4)

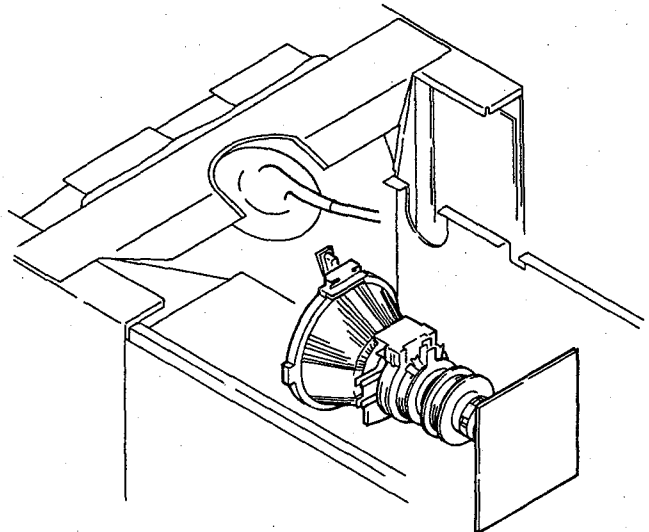
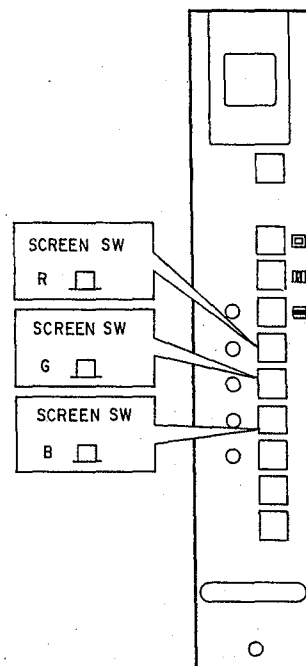


Fig. 1-4.

##### • Final check

After adjustments, check that there is no mislanding by facing the CRT towards East, West, North and South directions.

##### FRONT PANEL (L)



### [Convergence adjustment]

#### Preparation:

1. Connect the signal generator to receive the dot signal and crosshatch signal.
2. Adjust with CONTRAST and BRIGHTNESS controls to set to easy-to-monitor position those signals.
3. Set H.STATIC VR (RV17) on D0 Board to the mechanical center as shown in Fig. 1-5.

#### (1) Horizontal and Vertical Static Convergence

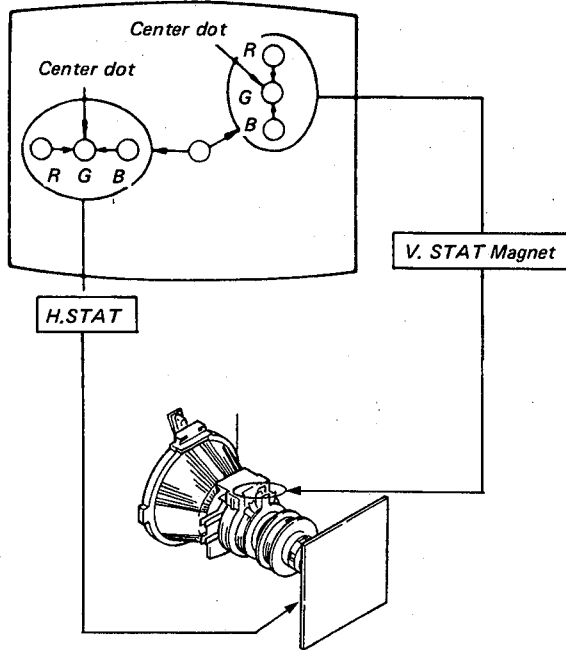
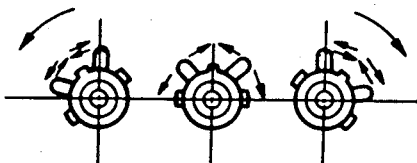
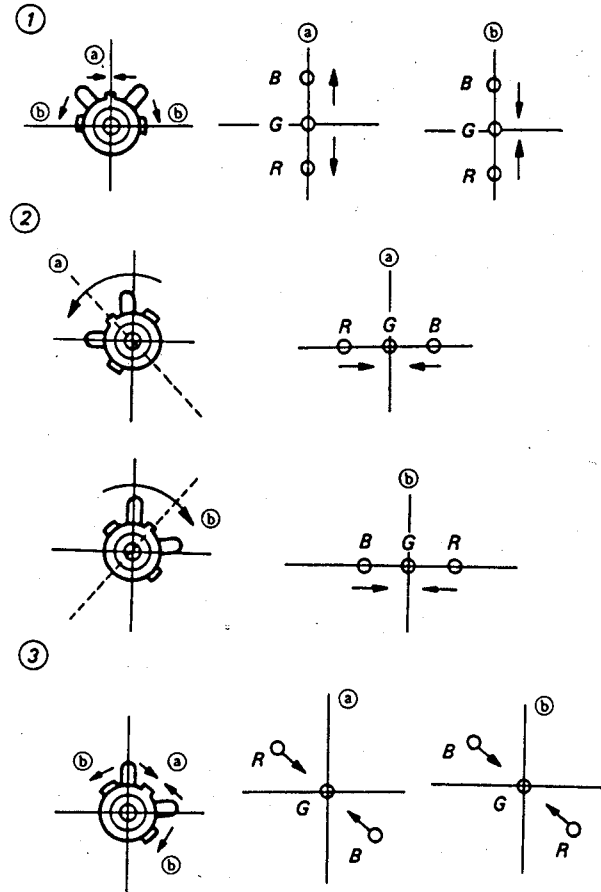


Fig. 1-5

1. Adjust H. STAT VR to coincide red, green and blue dots on the center of screen (Horizontal movement)
  2. Adjust V. STAT magnet to coincide red, green and blue dots on the center of screen (Vertical movement)
  3. If the red, green and blue dots do not coincide on the center of screen with H. STAT VR, perform horizontal convergence adjustment using H. STAT VR and V. STAT magnet as shown below. (In this case, H. STAT VR and V. STAT magnet effect each other.)
- Tilt the V. STAT magnet and adjust static convergence to open or close the V. STAT magnet.



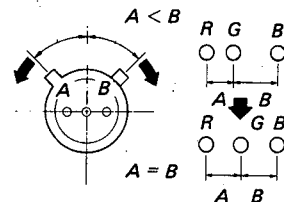
4. When the V. STAT magnet is moved in the direction of arrow (a) and (b), Red, Green and Blue dots move as shown below.



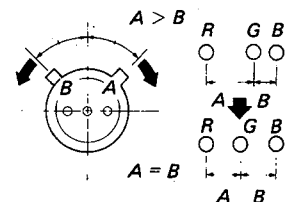
#### • HMC and VMC correction for Hexapole Magnet.

1. HMC (Horizontal. Mis. convergence) correction and motion of the Electron Beam with the Hexapole Magnet.

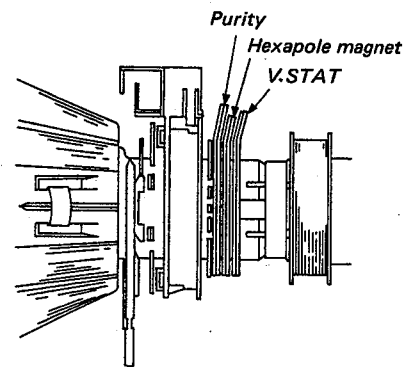
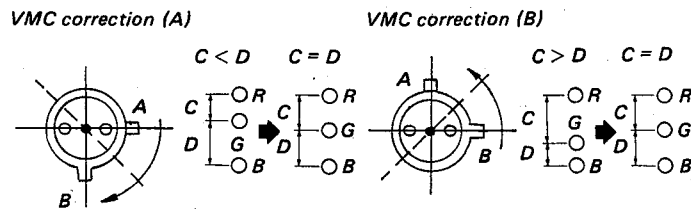
##### HMC correction (A)



##### HMC correction (B)



2. VMC (Vertical, Mis, convergence) correction and motion of the Electron Beam with the Hexapole Magnet.



## (2) Dynamic Convergence Adjustment

### Preparation:

- Before starting, perform Horizontal and Vertical Static Convergence Adjustment.

1. Loosen deflection yoke screw.
2. Remove deflection yoke spacers.
3. Move the deflection yoke for best convergence as shown in Fig. 1-6.
4. Tighten the deflection yoke screw.
5. Install the deflection yoke spacers.

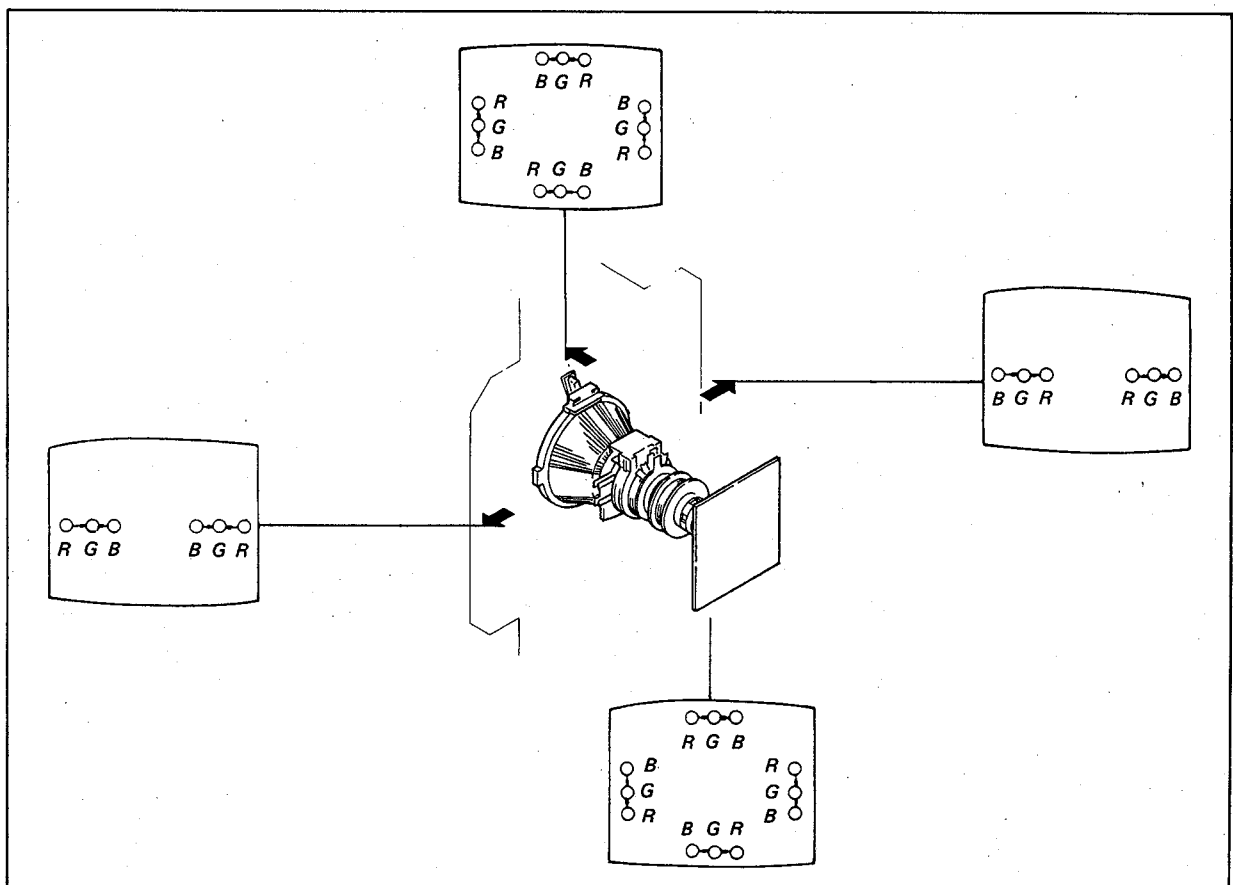
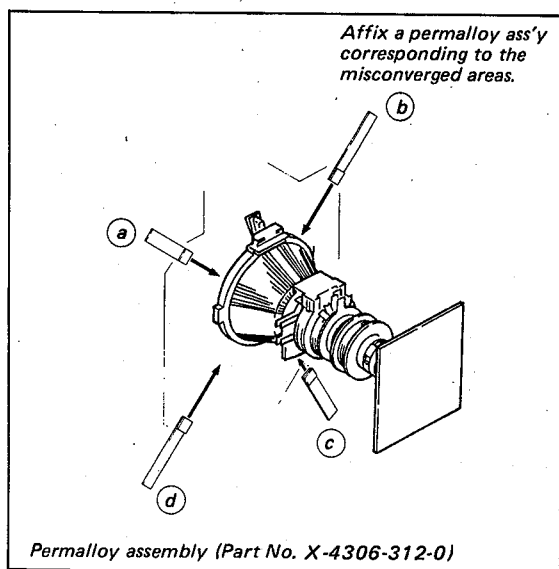
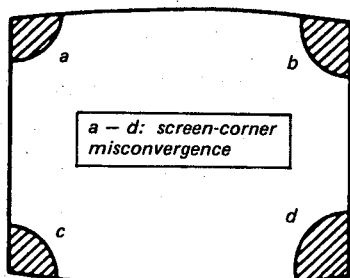


Fig. 1-6

### (3) Screen-corner Convergence



### [CONVERGENCE PROCESS]

- D board adjustment, i.e., convergence adjustment should be performed after the completion of CFD CRT basic adjustment (tilt, etc.). At this time, set RV15, 16, 17, 18, 19 and 20 on the D board to mid-range.

1. UNDER SCAN switch . . . . . NOR (□)
1. Adjust the vertical static convergence with V.STAT (RV20) at the left side of control panel as shown in left of Fig 1-7.
2. Adjust the horizontal static convergence with H.STAT (RV17) at the left side of control panel as shown in right of Fig 1-7.

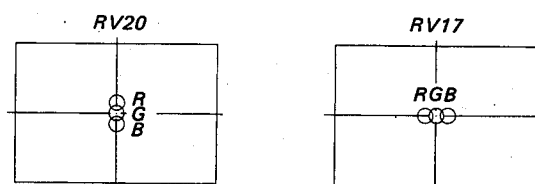


Fig. 1-7

3. Adjust the vertical convergence with X.C.T (RV18) on the D board as shown in left upper corner of Fig 1-8.
4. Adjust the vertical convergence with X.C.B (RV19) on the D board as shown in left lower corner of Fig 1-8.

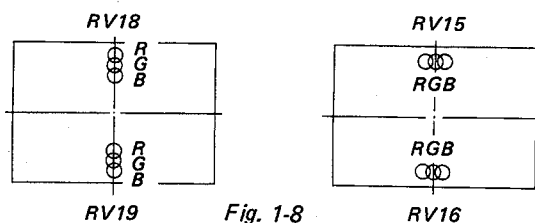


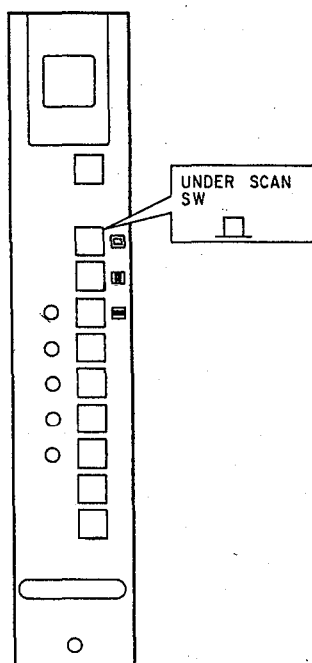
Fig. 1-8

5. Adjust the horizontal convergence with Y.C.T (RV15) on the D board as shown in right upper corner of Fig 1-8.
6. Adjust the horizontal convergence with Y.C.B (RV16) on the D board as shown in right lower corner of Fig 1-8.

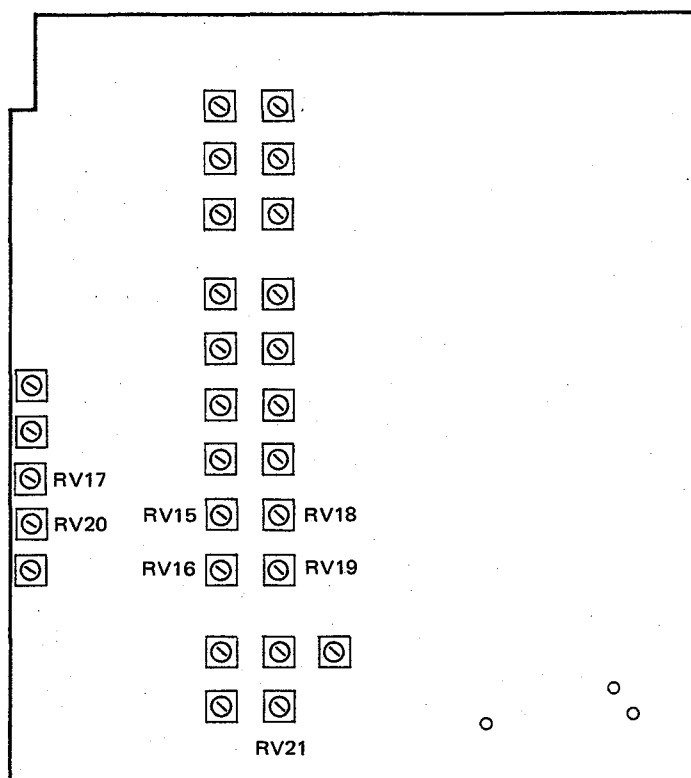
### Focus adjustment

Turn FOCUS (RV21) on the D board so that the focus point at the center of picture is optimum.

# FRONT PANEL (L)

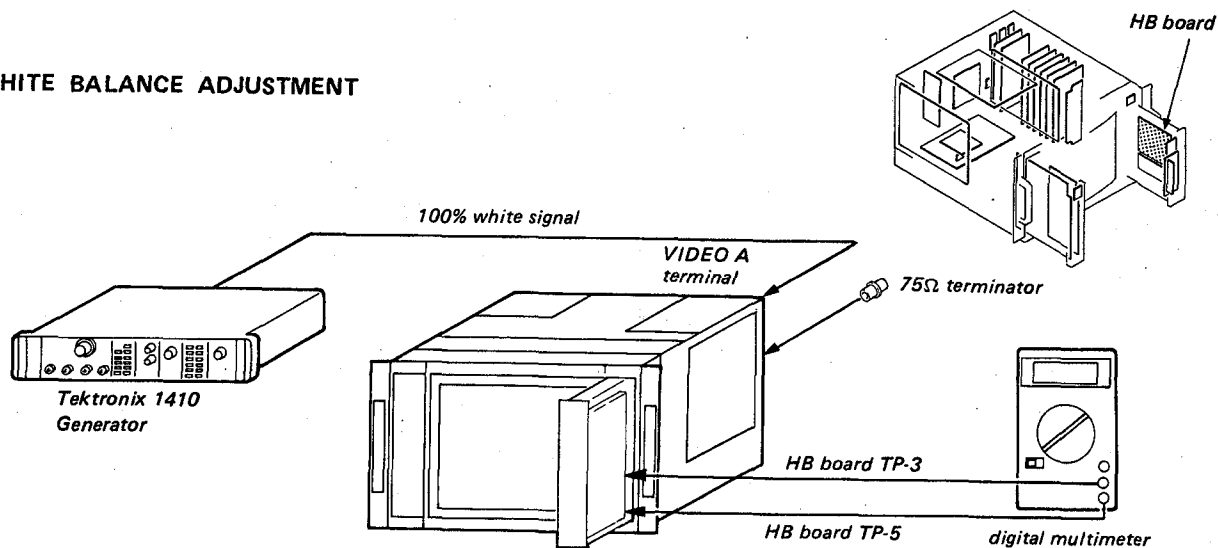




## D board



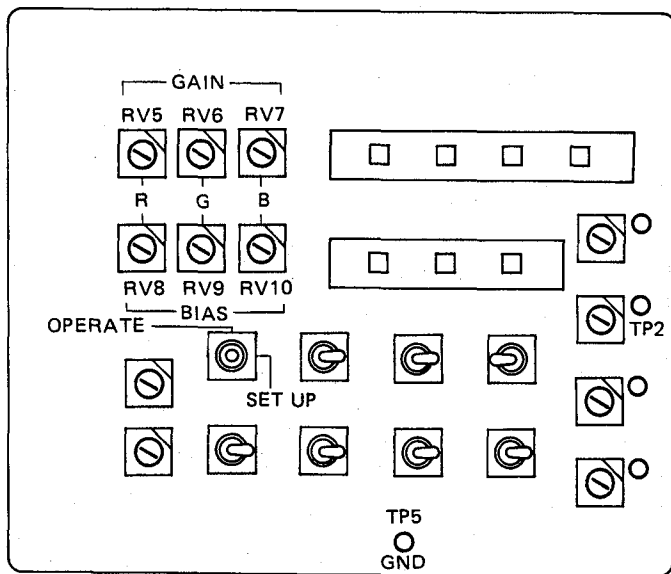


## WHITE BALANCE ADJUSTMENT

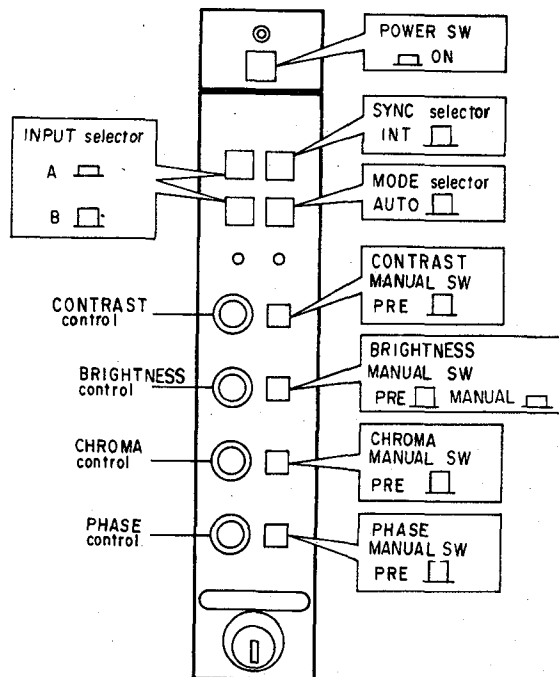


1. Input 100% white signal to VIDEO A connector.
2. WHITE/OPERATE/SET UP switch . . . . . SET UP.
3. Connect digital multimeter across TP2 and TP5 (ground).
4. BRIGHTNESS MANUAL switch . . . . . MANUAL. (  )
5. Adjust with BRIGHTNESS control so that the voltage of TP2 becomes  $-0.7$  Vdc.
6. Turn BIAS controls (RV8: Red, RV9: Green, RV10: Blue) on the HB board to adjust the BRIGHTNESS to 0.5NIT and white balance using COLOR ANALYZER and check 0.5NIT by LUMINANCE METER.
7. BRIGHTNESS MANUAL switch . . . . . PRET (  )
8. WHITE/OPERATE/SET UP switch . . . . . OPERATE.
9. Turn GAIN controls (RV5: Red, RV6: Green, RV7: Blue) on the HB board to adjust the BRIGHTNESS at HIGH LIGHT to 103 NIT and white balance using COLOR ANALYZER and check 103 NIT by LUMINANCE METER.
10. Repeat procedure steps 4 to 9 if necessary.

HB board



FRONT PANEL (R)



#### 4-6. SAFETY RELATED ADJUSTMENTS

##### +B PROTECTOR (R52, R53)

When replacing the following components (marked ☒ on the schematic diagram), make this confirmation.

- ☒ GA Board . . R52, R53, Q14, Q13
- GB Board . . D5, D6, R5, Q4, Q3, D7, R4, Q5, D8, R19, R20, R21, R22

It is necessary to use a digital multimeter for this confirmation.

Connect a digital multimeter to TP2 on GA Board.

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual bottom is out.)
2. Short-circuit R55 on GA Board.
3. Connect 100k $\Omega$  variable resistor with R68 in parallel on GA Board.
4. Confirm that the reading on the digital multimeter drops abruptly from +182.0V ~ +216.0V to 0V by turning the 100k $\Omega$  variable resistor so that the value of the resistor decrease from maximum value.
5. If step 4 isn't satisfied, check that the mounted components are correct.

##### +B MAX CONFIRMATION (R67, R68)

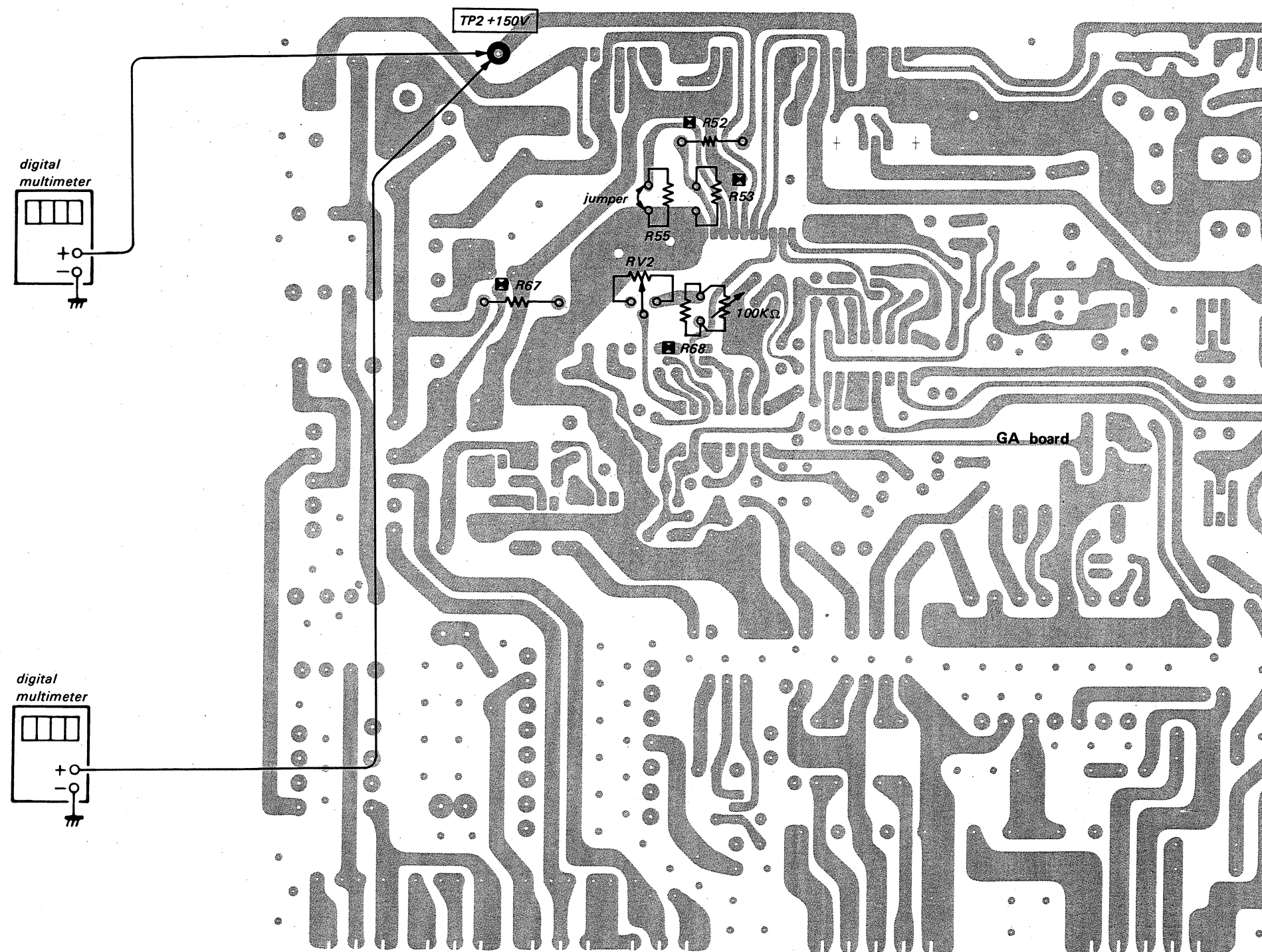
When replacing the following components (marked ☒ on the schematic diagram), make this confirmation.

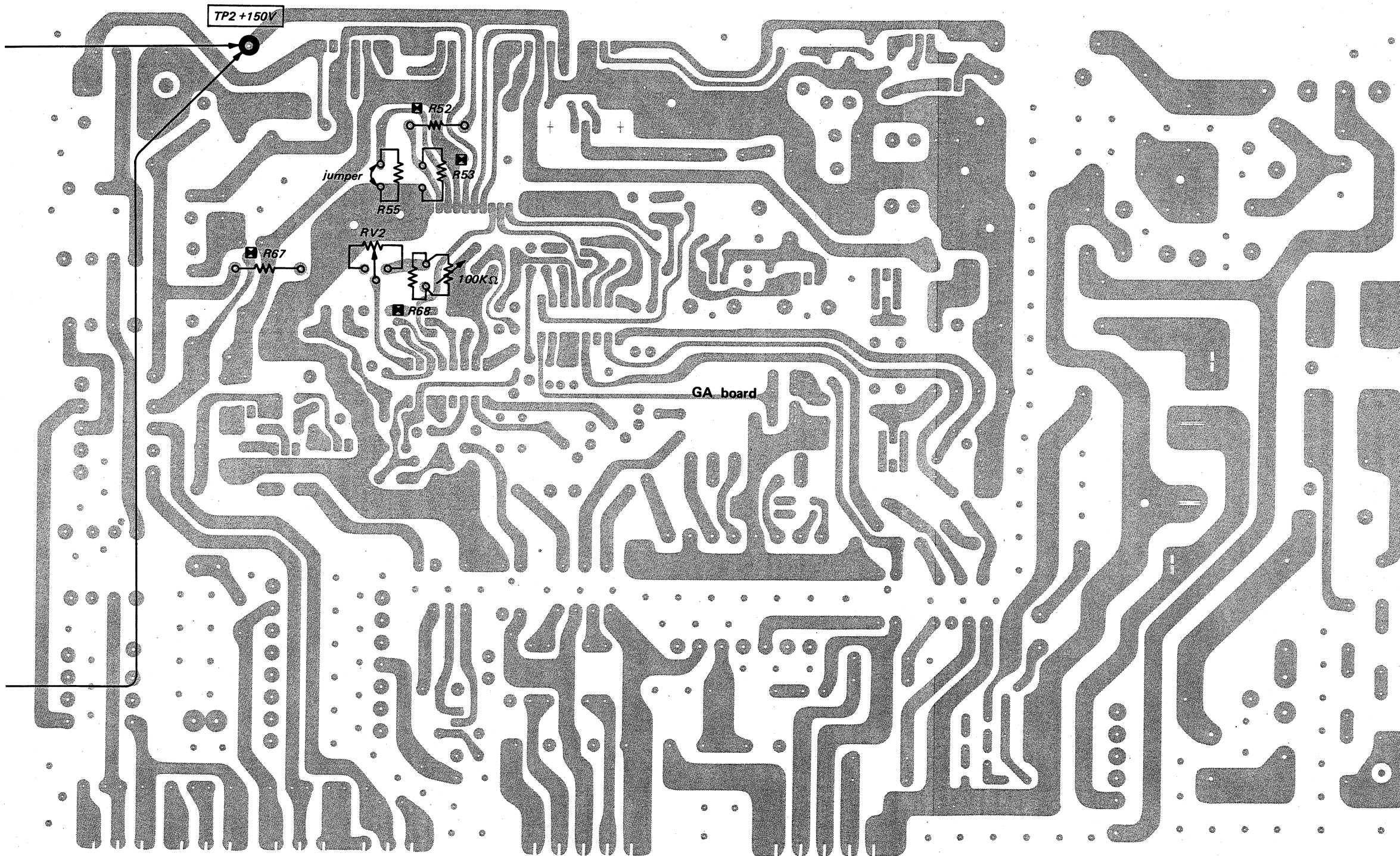
- ☒ GA Board . . R67, RV2, R68, IC3, C59, R78

It is necessary to use a digital multimeter for this confirmation.

Connect a digital multimeter to TP2 on GA Board.

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual bottom is out.)
2. Confirm that the reading on the digital multimeter is between +155.0V and +175.0V when RV2 variable resistor is turned to fully clockwise.
3. After confirmation, make the reading on the digital multimeter into +150.0V  $\pm$ 0.5V by adjusting RV2 on GA Board.







## HIGH VOLTAGE HOLD DOWN ADJUSTMENT AND CONFIRMATION

(☒ R106, R108)

When replacing the following components (marked ☒ on the schematic diagram), make this adjustment

- ☒ HVR
- ☒ EA Board... IC4, D24, D25, D29, D27, R89, R90, R105, R107, R109, R110, R111, R102, R103

It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode cap.

Connect the DC current meter (3 mA range, accuracy of 1.0 class or more)

Even though an electrostatic voltmeter may not be used, connect digital multimeters to TP2, TP6 and TP5 (GND) on EA Board.

**Note:** Use an electrostatic voltmeter which is calibrated, and which has  $2 \times 10^9 \Omega$  or more input impedance. example: ESH-27X or ESH-23X of the SINGER COMPANY

Use a digital multimeter which has 4 digit or more.

### • In case of using electrostatic voltmeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to fully counterclockwise. (Manual button is IN  $\square$ )
2. Connect 200 k $\Omega$  variable resistor with R75 in parallel on EA Board.
3. Confirm and memorize that the reading on the electrostatic voltmeter drops abruptly from 29.5 kV through 27.5 kV to 0V by turning slowly the 200 k $\Omega$  variable resistor so that the value of the resistor decrease from maximum value.
4. If step 3 is not satisfied, select the value of R106 and R108 (1/6W metal-film) and repeat above step 3.
5. Adjust so that the reading of current meter connected becomes 1000  $\mu$ A by turning CONTRAST and BRIGHTNESS controls.
6. Confirm and memorize that the reading on the electrostatic voltmeter drops abruptly from 28.2 kV through 26.2 kV to 0V by turning slowly the 200 k $\Omega$  variable resistor and check the difference of memorized voltage between in steps 3 and 6 is over 1.15 kV.

### • In case of using a digital multimeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to fully counterclockwise. (Manual button is IN  $\square$ )
2. Connect 200 k $\Omega$  variable resistor with R75 in parallel on EA BOARD.
3. Confirm that the reading on the digital multimeter of TP2 on EA Board is between 16.75V and 16.95V.
4. If step 3 is not satisfied, select the value of R106 and R108 (1/6W metal-film) and repeat above step 3.
5. Confirm that the reading on the digital multimeter at 7 pin of IC4 on EA Board drops abruptly from between 16.75V and 16.95V by turning slowly the 200 k $\Omega$  variable resistor from maximum value.
6. If step 5 is not satisfied, select the value of R106 and R108 (1/6W metal-film) and repeat above steps 3 through 5.

7. Adjust so that the reading of current meter connected becomes 1000  $\mu$ A by turning CONTRAST and BRIGHTNESS controls.
8. Confirm that the reading on the digital multimeter at TP6 on EA Board drops abruptly from between 16.04V and 16.24V by turning slowly the 200 k $\Omega$  variable resistor so that the value of the resistor decrease from maximum value.
9. If step 8 is not satisfied, select the value of R106 and R108 (1/6W metal-film) and repeat above steps 3 through 6.)

## HIGH VOLTAGE REGULATOR CONFIRMATION

(☒ R72, R75)

When replacing the following components (marked ☒ on the schematic diagram), make this adjustment

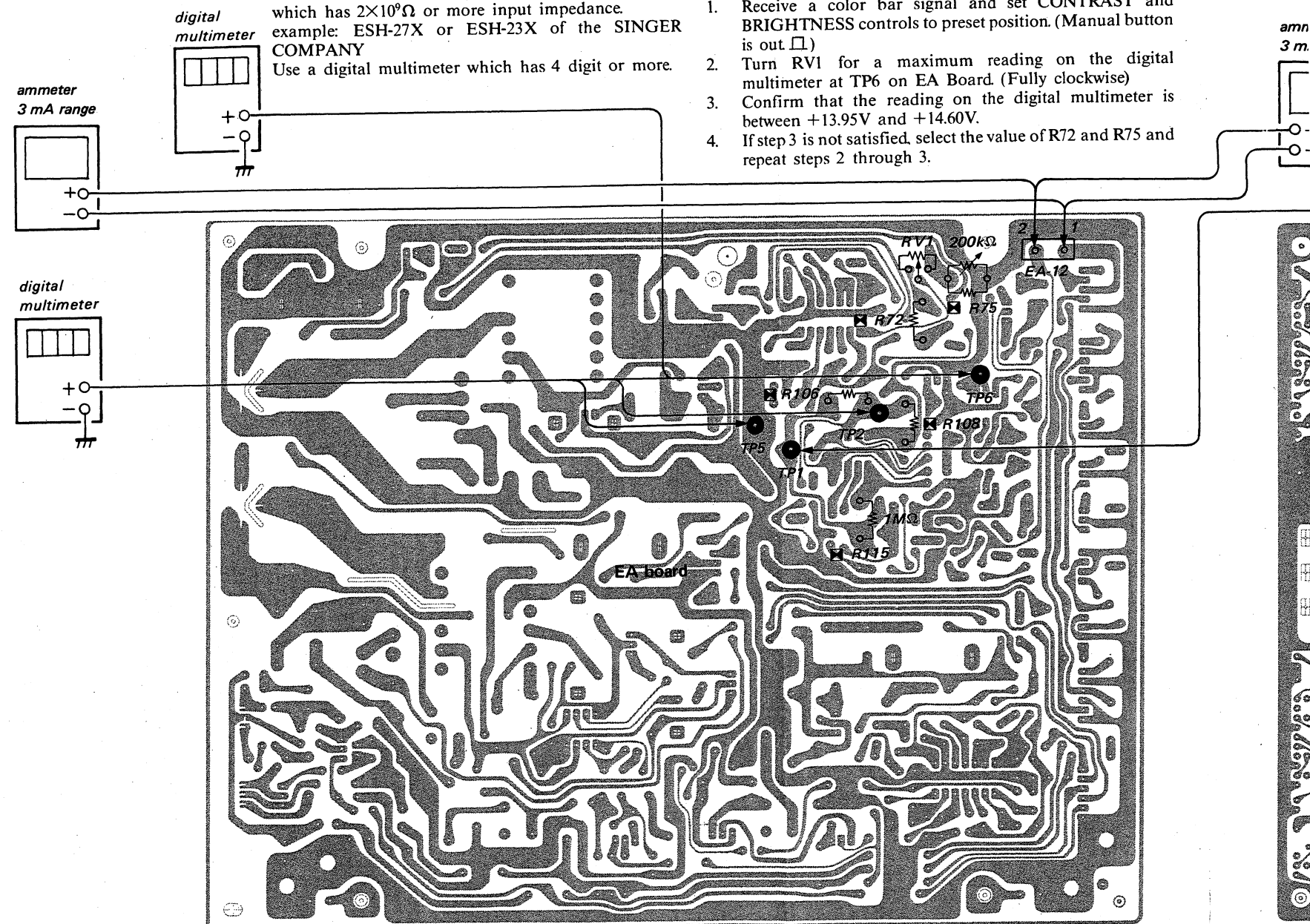
- ☒ HVR
- ☒ EA Board... R61, R62, R71, R73, R74, R88, RV1, IC2, IC3

It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode cap.

Even though an electrostatic voltmeter may not be used, connect digital multimeter to TP6 on EA Board.

**Note:** Use an electrostatic voltmeter which is calibrated, and which has  $2 \times 10^9 \Omega$  or more input impedance. example: ESH-27X or ESH-23X of the SINGER COMPANY

Use a digital multimeter which has 4 digit or more.



### • In case of using electrostatic voltmeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is out  $\square$ )
2. Turn RV1 on EA Board for a maximum reading on the electrostatic voltmeter. (Fully clockwise)
3. Confirm that the reading on the electrostatic voltmeter is between 25.23 kV and 25.48 kV.
4. If step 3 is not satisfied, select the value of R72 and R75 and repeat above steps 2 through 3.
5. After confirmation, adjust RV1 for 25.0 kV $\pm$ 0.1 kV on the electrostatic voltmeter.

### • In case of using a digital multimeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is out  $\square$ )
2. Turn RV1 for a maximum reading on the digital multimeter at TP6 on EA Board. (Fully clockwise)
3. Confirm that the reading on the digital multimeter is between +13.95V and +14.60V.
4. If step 3 is not satisfied, select the value of R72 and R75 and repeat steps 2 through 3.

## BEAM

(☒ R115)

When replacing the following components (marked ☒ on the schematic diagram), make this adjustment

- ☒ EA B

P Board.

It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode cap.

amm  
3 m.

# HIGH VOLTAGE REGULATOR CONFIRMATION

(☒ R72, R75)

When replacing the following components (marked ☒ on the schematic diagram), make this adjustment.

- ☒ HVR
- ☒ EA Board... R61, R62, R71, R73, R74, R88, RV1, IC2, IC3

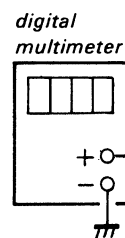
It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode cap.

Even though an electrostatic voltmeter may not be used, connect digital multimeter to TP6 on EA Board.

**Note:** Use an electrostatic voltmeter which is calibrated, and which has  $2 \times 10^9 \Omega$  or more input impedance.

example: ESH-27X or ESH-23X of the SINGER COMPANY

Use a digital multimeter which has 4 digit or more.



## In case of using electrostatic voltmeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is out ☐)
2. Turn RV1 on EA Board for a maximum reading on the electrostatic voltmeter. (Fully clockwise)
3. Confirm that the reading on the electrostatic voltmeter is between 25.23 kV and 25.48 kV.
4. If step 3 is not satisfied, select the value of R72 and R75 and repeat above steps 2 through 3.
5. After confirmation, adjust RV1 for 25.0 kV $\pm$ 0.1 kV on the electrostatic voltmeter.

## In case of using a digital multimeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is out ☐)
2. Turn RV1 for a maximum reading on the digital multimeter at TP6 on EA Board. (Fully clockwise)
3. Confirm that the reading on the digital multimeter is between +13.95V and +14.60V.
4. If step 3 is not satisfied, select the value of R72 and R75 and repeat steps 2 through 3.

# BEAM CURRENT PROTECTOR 1 CONFIRMATION

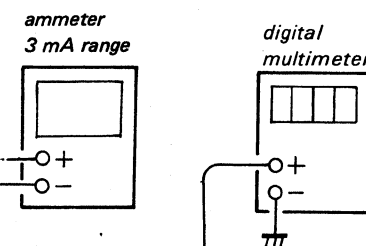
(☒ R115)

When replacing the following components (marked ☒ on the schematic diagram), make this confirmation.

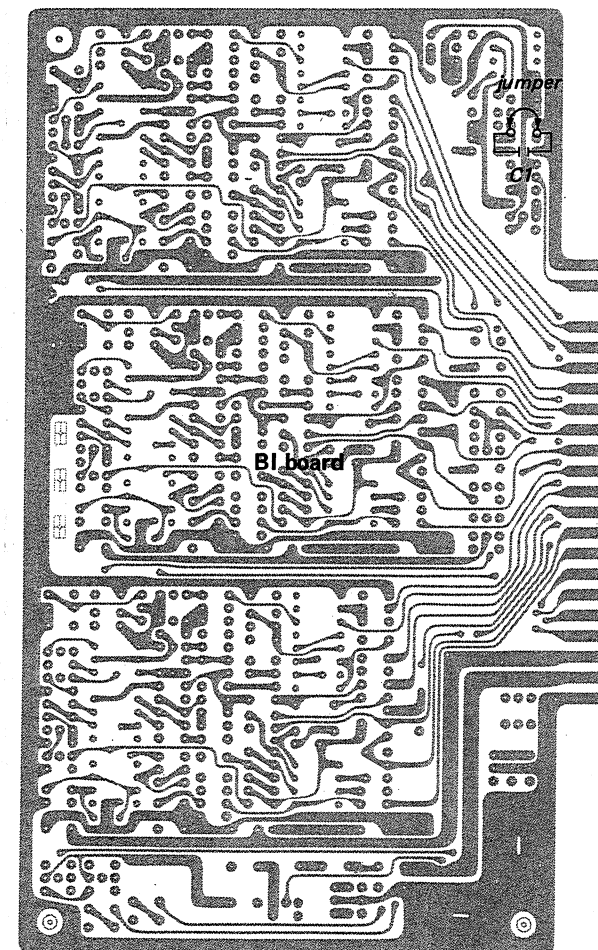
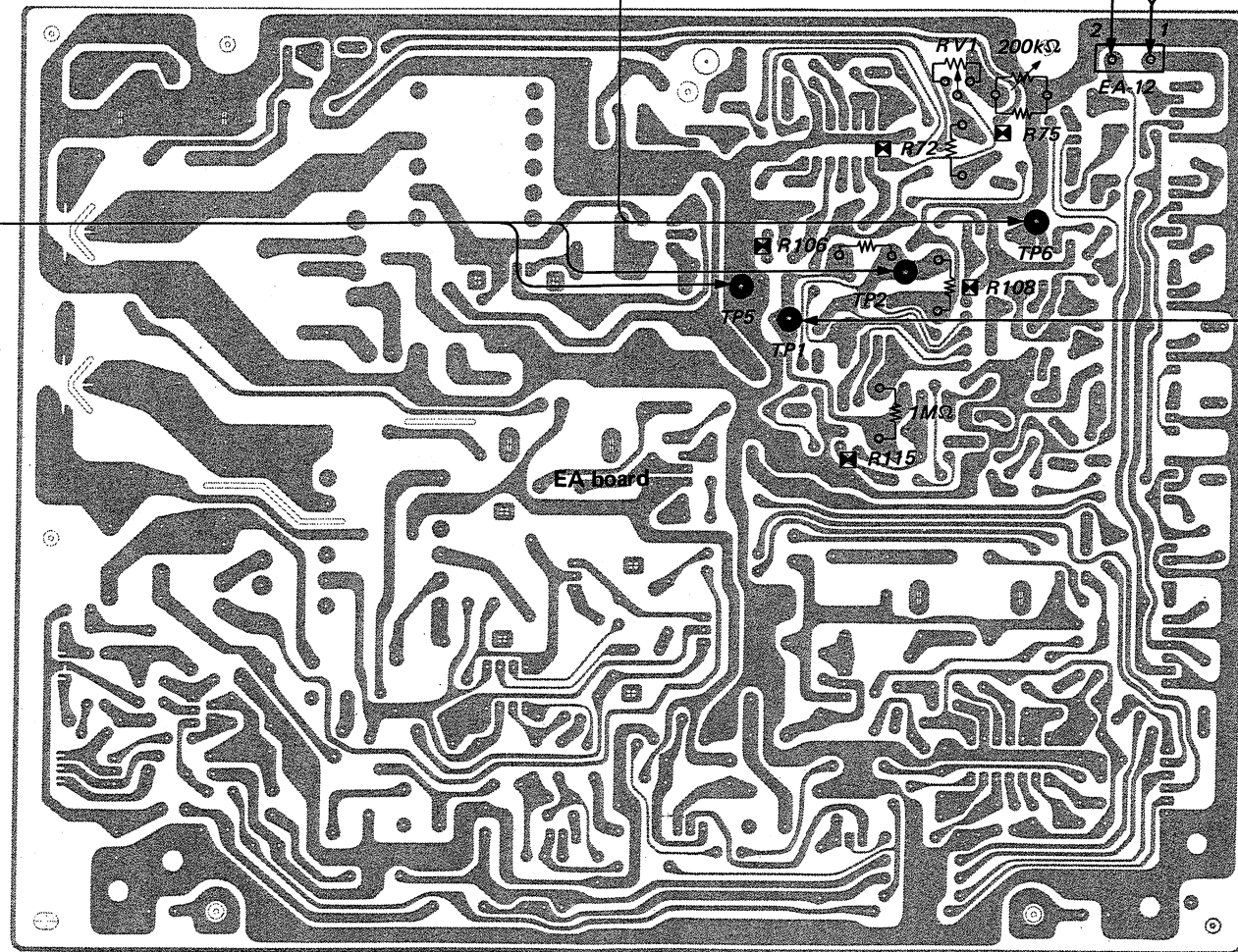
- ☒ EA Board... IC4, D24, D26, D27, D29, R89, R90, R102, R103, R113, R114, R116, R117, R118, R119, R120, R121, R122, R123, R124, R112
- P Board..... FBT

It is necessary to use a regulated digital multimeter for this confirmation.

Connect the digital multimeters to TP1 on EA Board. Connect the current meter to EA-12. (3 mA Range, accuracy of 1.0 class or more)



1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is IN ☐)
2. Confirm that the reading on the digital multimeter of TP1 on EA Board is between +31.0V and +33.5V.
3. If the reading on the digital multimeter of TP1 is more than +32.25V, 1 M $\Omega$  $\pm$ 1% 1/6W (metal-film) should be mounted at the portion R115 on EA Board. (Normally in this position R115 is not mounted.)
4. Short-circuit C1 of BI Board.
5. Confirm that the picture disappears in the current meter's reading range of 1.33 mA to 1.97 mA while increasing the luminance by turning CONTRAST and BRIGHTNESS controls in MANUAL mode. (WHITE SW ON)
6. If step 5 is not satisfied, confirm whether the part mounted to R115 is correct.
7. Set BI Board (short-circuited C1) and EA-12 to the original condition.



#### 4-7. CIRCUIT ADJUSTMENTS

- To make the following adjustments, unless otherwise specified, the controls knobs and switches shall be preset as described below.

##### FRONT PANEL (R)

- |                                       |            |
|---------------------------------------|------------|
| 1. INPUT selector . . . . . A         | ] HC board |
| 2. SYNC selector . . . . . INT        |            |
| 3. MODE selector . . . . . AUTO       |            |
| 4. CONTRAST MANUAL switch . . PRESET  | ] HG board |
| 5. BRIGHTNESS MANUAL switch . PRESET  |            |
| 6. CHROMA MANUAL switch . . . PRESET  |            |
| 7. PHASE MANUAL switch . . . . PRESET |            |

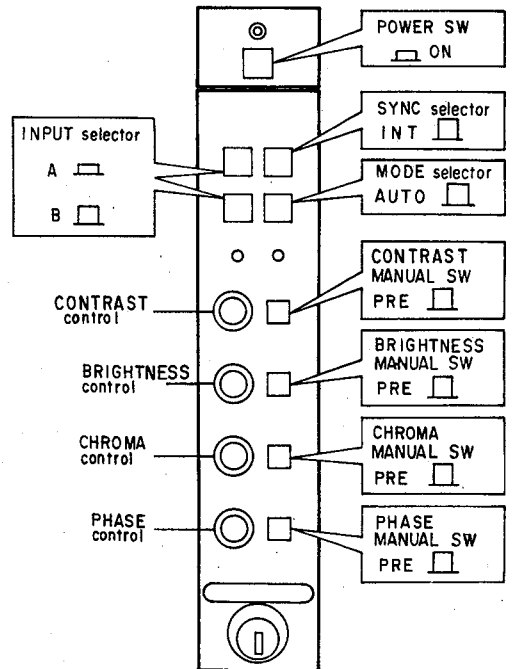
##### FRONT PANEL (L)

- |                                                              |            |
|--------------------------------------------------------------|------------|
| 8. SCAN MODE switch                                          | ] HA board |
| <input checked="" type="checkbox"/> UNDER SCAN . . . . . NOR |            |
| <input checked="" type="checkbox"/> H. DELAY . . . . . NOR   |            |
| <input checked="" type="checkbox"/> V. DELAY . . . . . NOR   |            |
| 9. SCREEN switch (R) . . . . . NOR                           |            |
| 10. SCREEN switch (G) . . . . . NOR                          |            |
| 11. SCREEN switch (B) . . . . . NOR                          |            |
| 12. APT switch . . . . . NOR                                 |            |
| 13. BLUE ONLY switch . . . . . NOR                           |            |
| 14. COMB/TRAP filter selector . . . . TRAP                   |            |

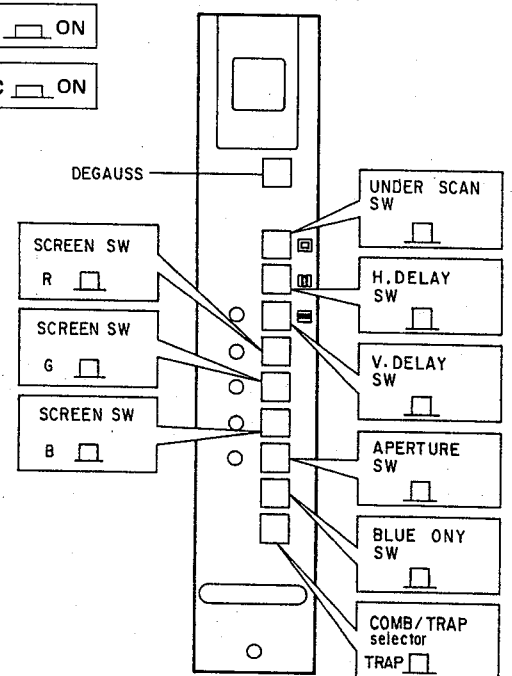
##### SUB CONTROL PANEL

- |                                                     |            |
|-----------------------------------------------------|------------|
| 15. INPUT SELECT buttons . . . . . B                | ] HB board |
| 16. COLOR STANDARD buttons . . . NTSC               |            |
| 17. FILTER switch . . . . . OFF                     |            |
| 18. MATRIX switch . . . . . OFF                     |            |
| 19. PAL/SECAM mode selector . . . D(L)              |            |
| 20. WHITE/OPERATE/SET UP selector . . . . . OPERATE |            |
| 21. SPLIT SCREEN switch . . . . . OFF               |            |
| 22. CROSS HATCH switch . . . . . OFF                |            |
| 23. VITC switch . . . . . OFF                       |            |
| 24. PIC. SET UP switch . . . . . OFF                |            |
| 25. AFC switch . . . . . N                          | ] D board  |

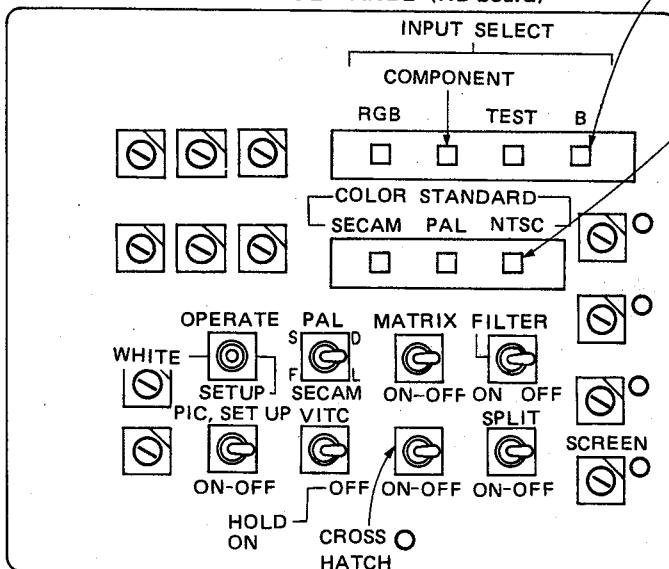
##### FRONT PANEL (R)



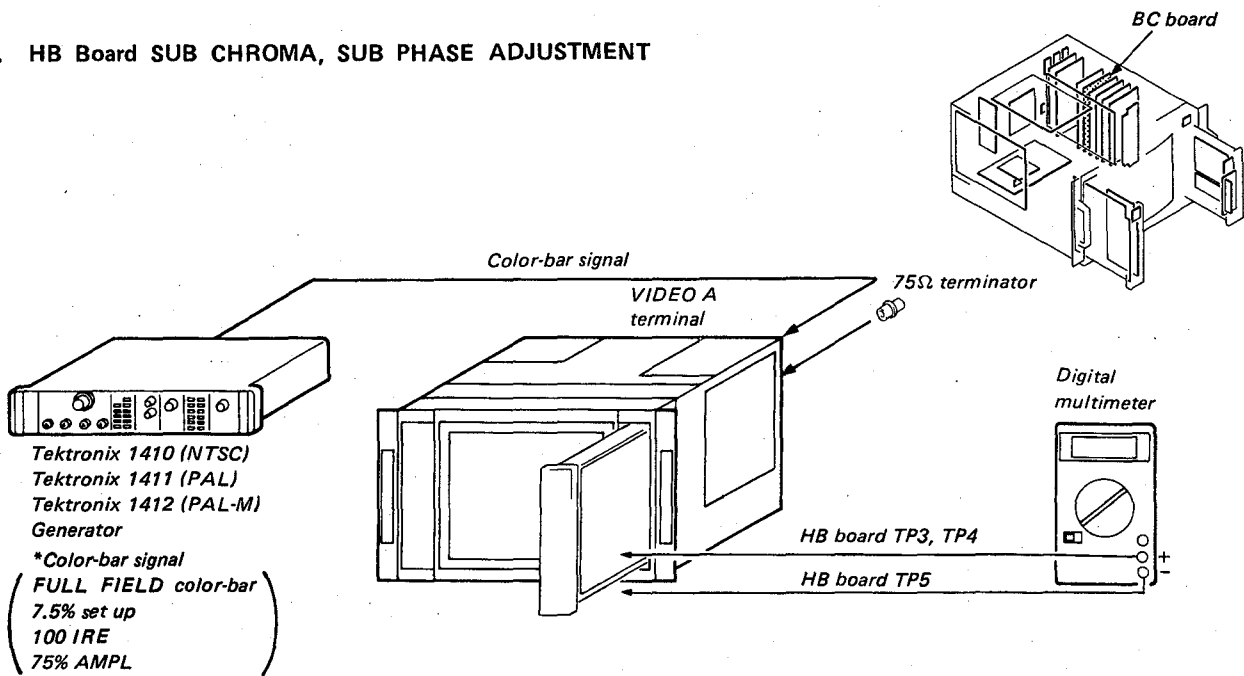
##### FRONT PANEL (L)



##### SUB CONTROL PANEL (HB board)

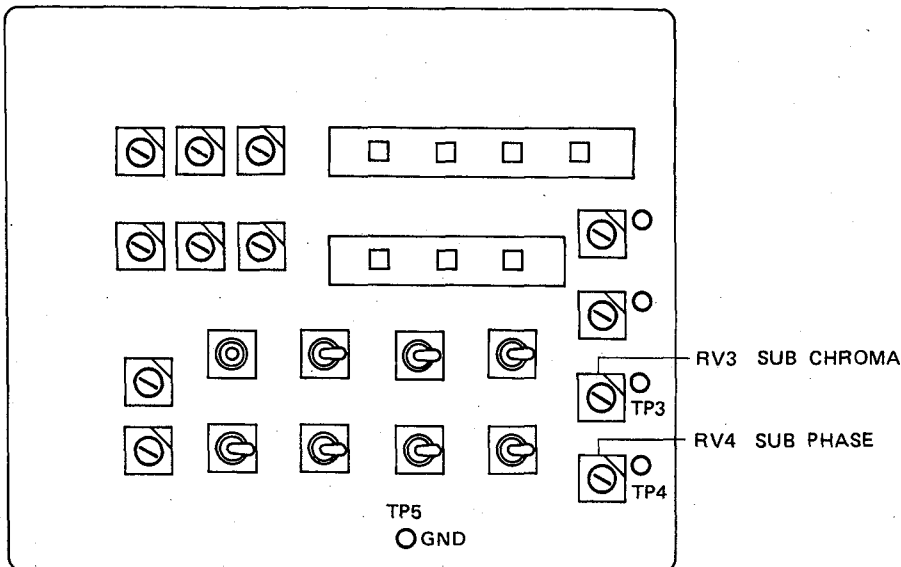


# 1. HB Board SUB CHROMA, SUB PHASE ADJUSTMENT

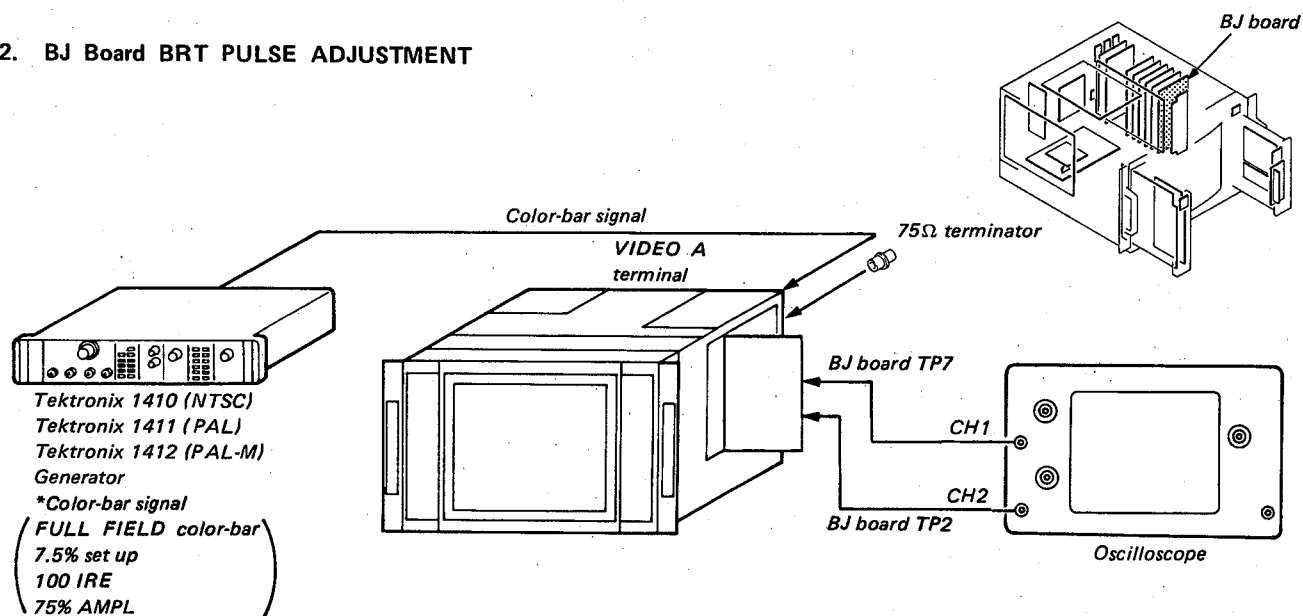


1. Connect a digital multimeter to the TP3 of HB board and TP5 (ground).
2. Adjust to -5.5V DC with RV3. (SUB CHROMA)
3. Connect a digital multimeter to the TP4 of HB board and TP5.
4. Adjust to 0V DC with RV4. (SUB PHASE) of HB board.

HB board



## 2. BJ Board BRT PULSE ADJUSTMENT



1. Input a color-bar signal to VIDEO A terminal of the set.
2. Connect an oscilloscope (CH1 probe) to the TP7 of BJ board and oscilloscope (CH2 probe) to the TP2 of BJ board.
3. Adjust RV7 to obtain the waveform on the oscilloscope as shown in Fig. 2-1.

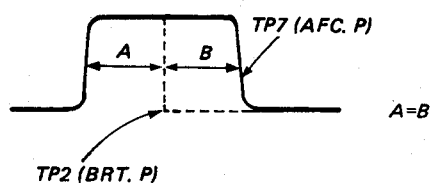
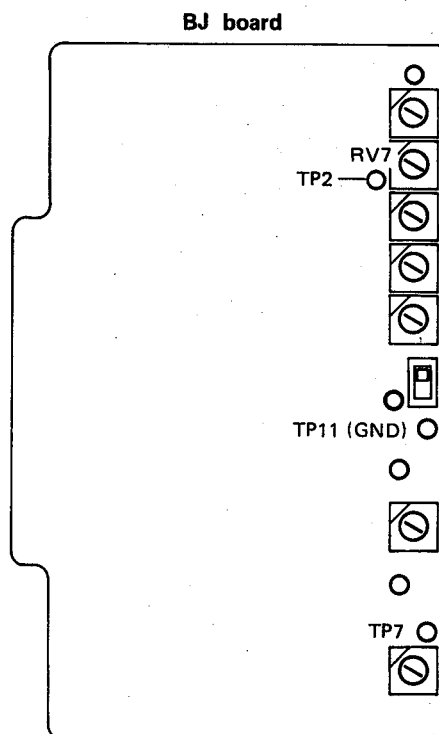
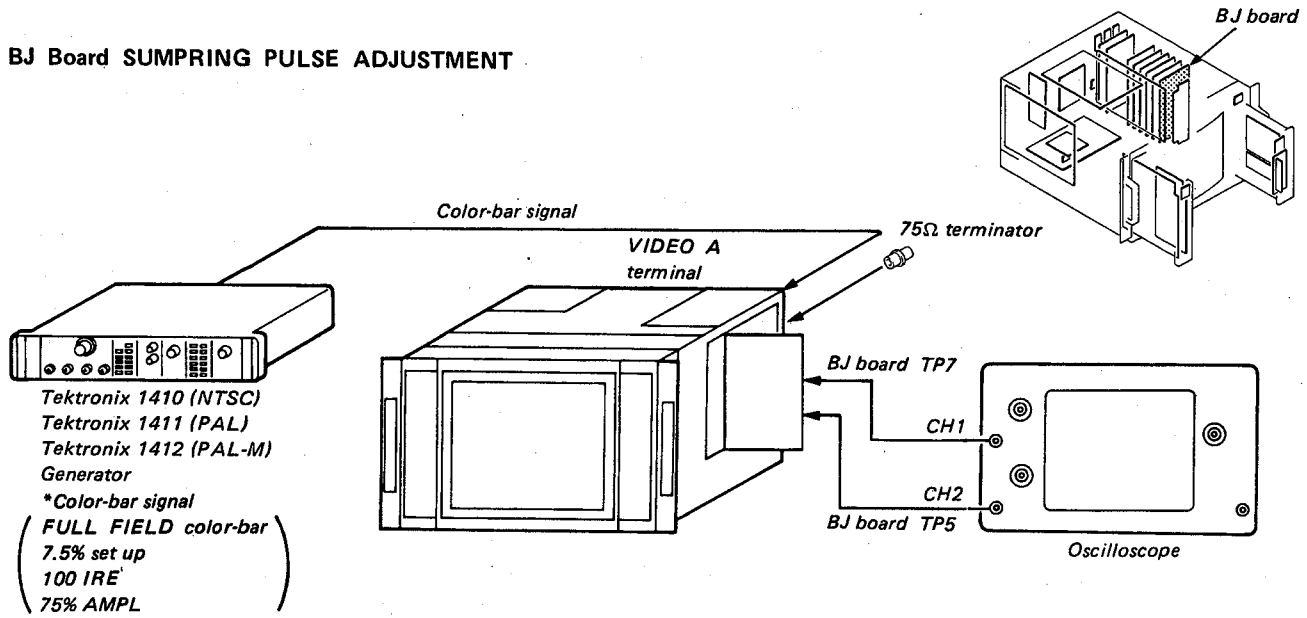


Fig. 2-1





## BJ Board SUMPRING PULSE ADJUSTMENT



1. Input a color-bar signal to VIDEO A terminal of the set.
2. Connect an oscilloscope (CH 1 probe) to the TP7 of BJ board and Connect an oscilloscope (CH 2 probe) to the TP5 of BJ board.
3. Adjust RV5 to obtain the waveform on the oscilloscope as shown in Fig. 2-2.

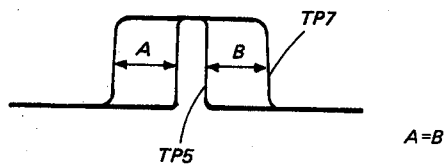
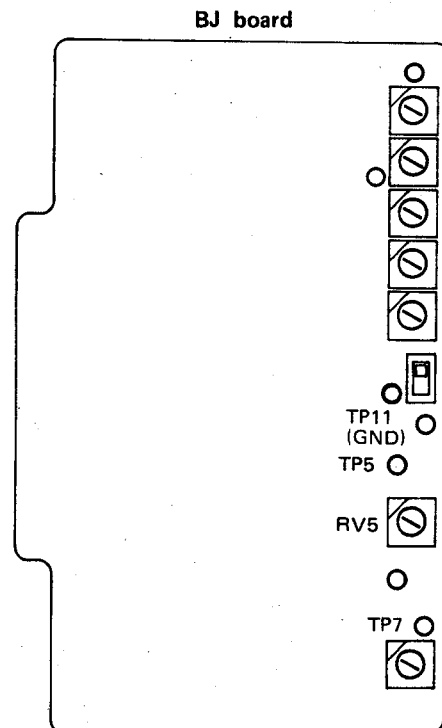
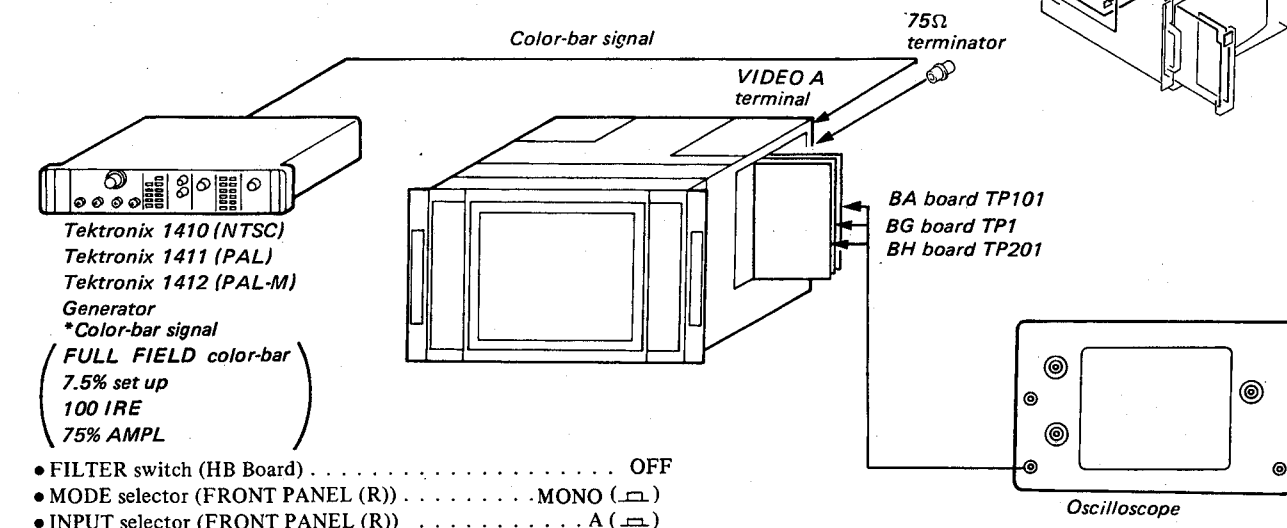


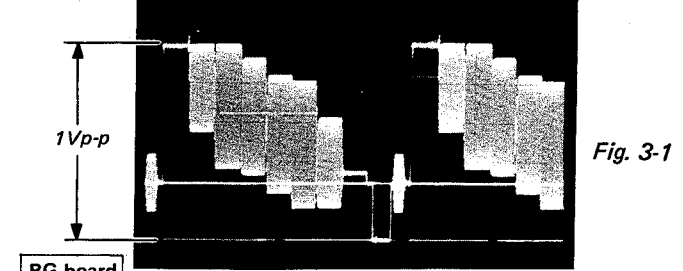
Fig. 2-2



### 3. EACH CHANNEL LEVEL ADJUSTMENT

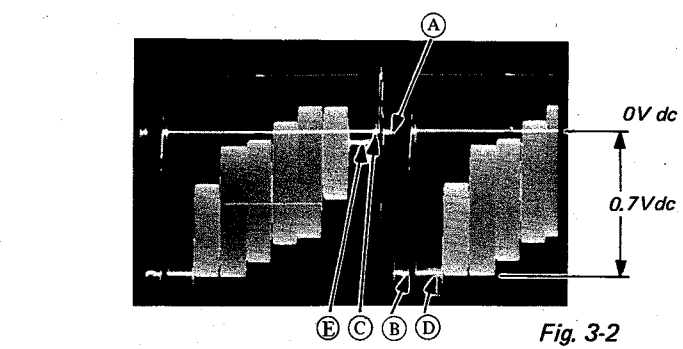


- BA board**
1. Input a color-bar signal to VIDEO A terminal to the set.
  2. Connect an oscilloscope to the TP101 of BA board.
  3. Adjust to 1.0Vp-p with RV101 of BA board as shown in Fig. 3-1.



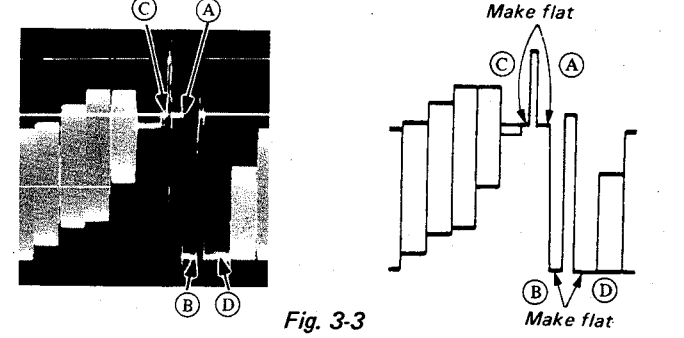
- BG board**
4. Connect an oscilloscope to the TP1 of BG board.
  5. Adjust to 1.0Vp-p with RV3 of BG board as shown in Fig. 3-1.
  6. Connect an oscilloscope to the TP201 of BH board.

- HB board**
7. Adjust RV2 (SUB BRT) of HB board so that (A) (black level) is 0V DC as shown in Fig. 3-2.
  8. Adjust RV1 (SUB CONT) of HB board so that (B) (100% white level) is -0.7V DC as shown in Fig. 3-2.

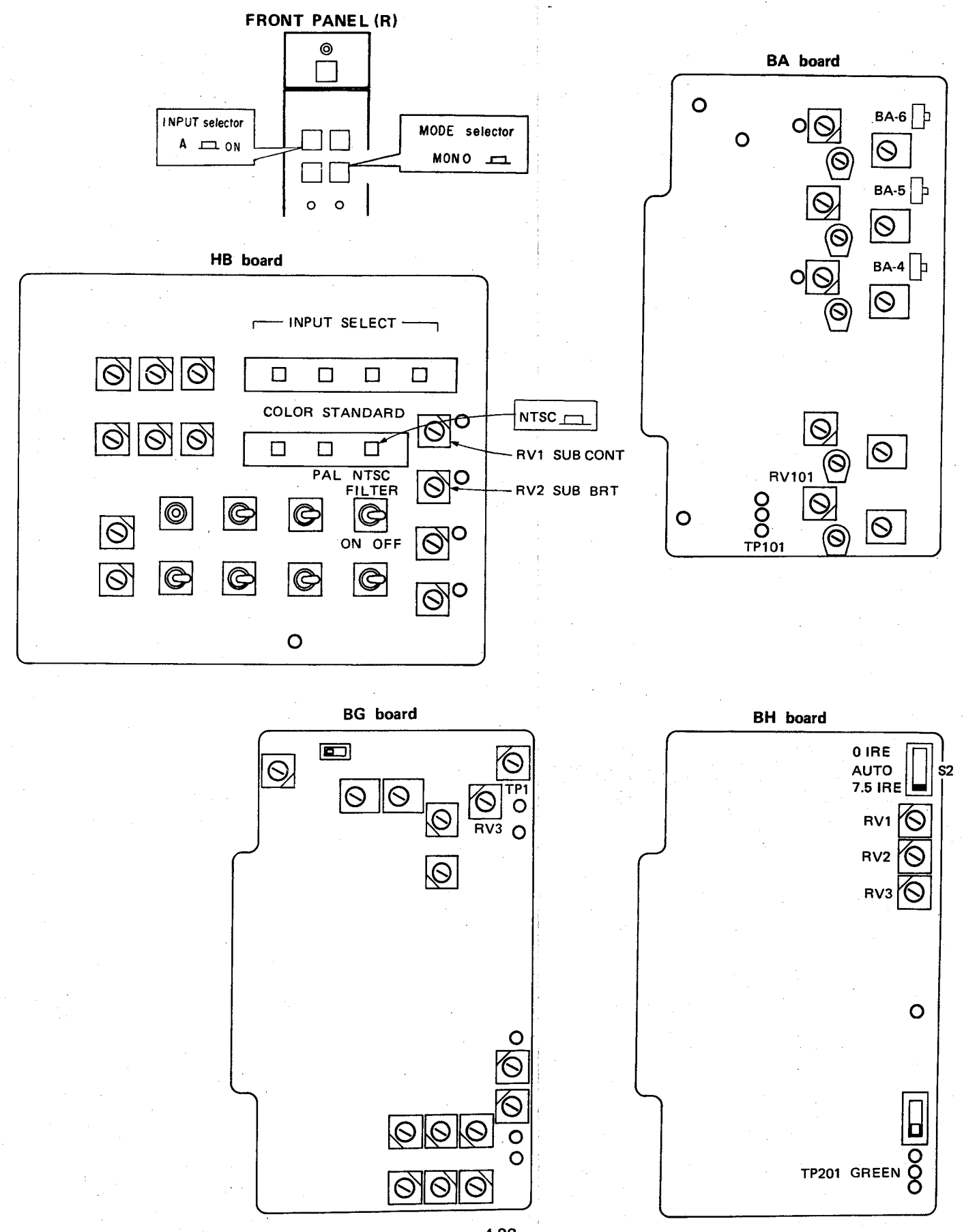
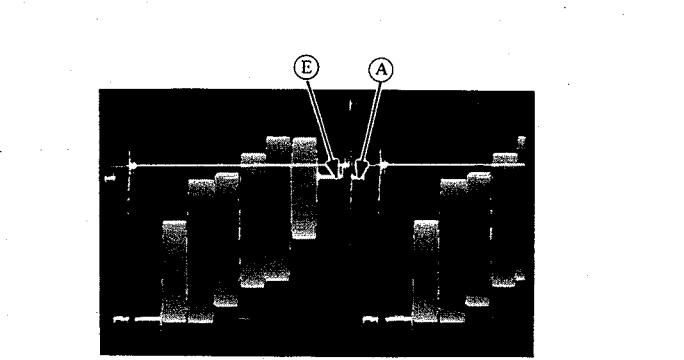


- (A) . . . . . Black level  
(B) . . . . . 100% White level  
(C) . . . . . 0 IRE level  
(D) . . . . . 100 IRE level  
(E) . . . . . 7.5 IRE level

- BH board**
9. S2 (BH Board) . . . . . 0 IRE  
Adjust RV1 of BH board so that the (C) (0 IRE level) coincides with (A) (Black level) as shown in Fig. 3-3.
  10. Adjust RV3 of BH board so that the (D) (100 IRE level) coincides with (B) (100% white level) as shown in Fig. 3-3.

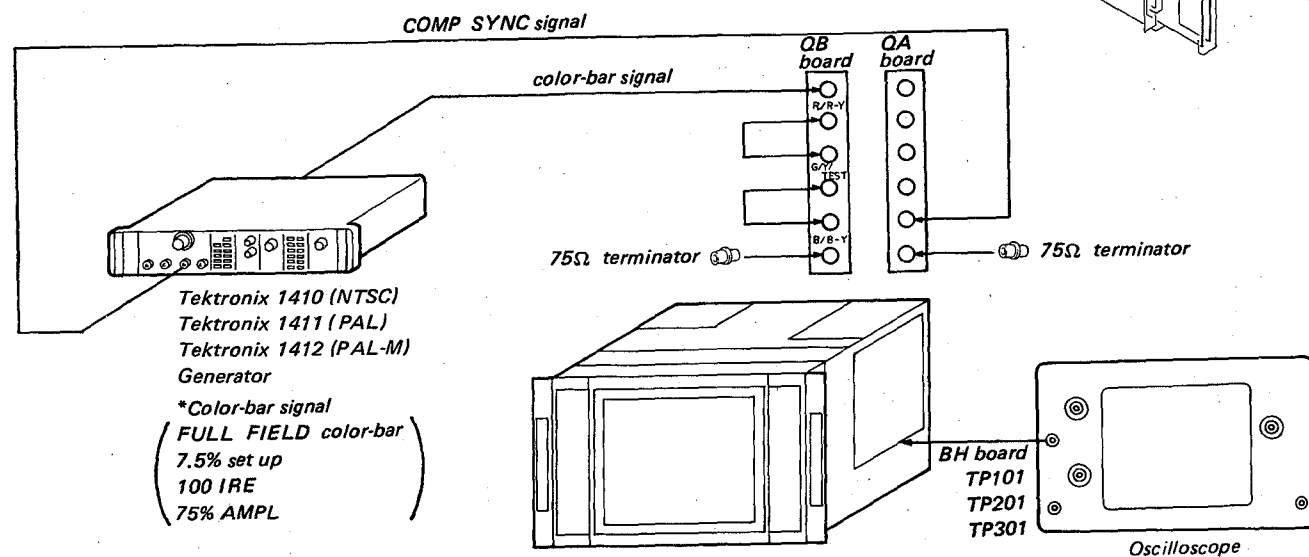
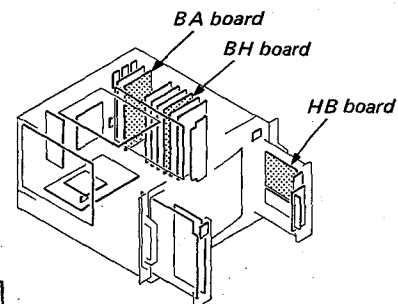


- BH board**
11. S2 (BH Board) . . . . . 7.5 IRE  
Adjust RV2 of BH board so that the (E) (7.5 IRE level) coincides with (A) (Black level) as shown in Fig. 3-4.
  12. Set S2 (BH Board) to 0 IRE.



# **BA board**

13. Input a color-bar signal to VIDEO B terminal of the set.
  - INPUT selector (FRONT PANEL (R)) ..... B ( ☐ )
  - SYNC selector (FRONT PANEL (R)) ..... EXT ( ☐ )
  - INPUT SELECT buttons (SUB CONTROL PANEL (R)) ..... RGB ( ☐ )



14. Connect an oscilloscope to TP101 of BH board.
15. Adjust RV401 of BA board so that the ① (100 IRE level) coincides with ② (100% white level) as shown in Fig. 3-5.
16. Connect an oscilloscope to TP201 of BH board.
17. Adjust RV501 of BA board so that the ① (100 IRE level) coincides with ② (100% white level) as shown in Fig. 3-5.
18. Connect an oscilloscope to TP101 of BH board.
19. Adjust RV601 of BA board so that the ① (100 IRE level) coincides with ② (100% white level) as shown in Fig. 3-5.

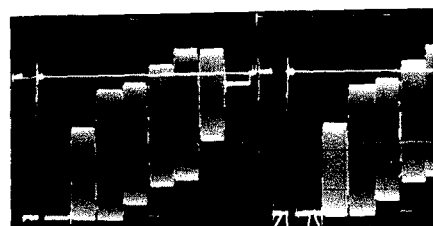
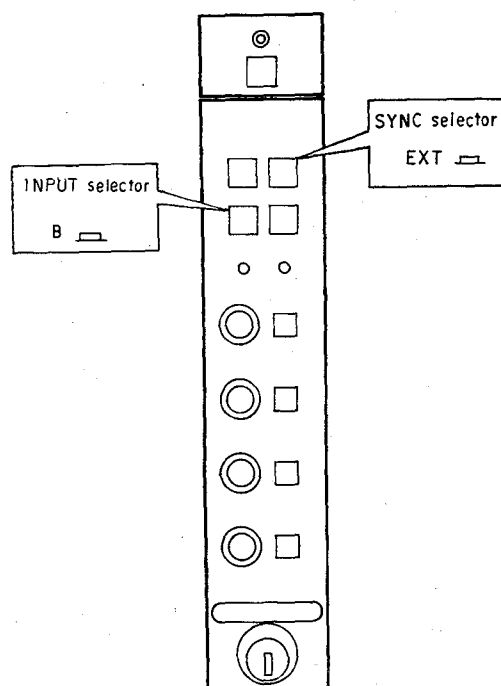


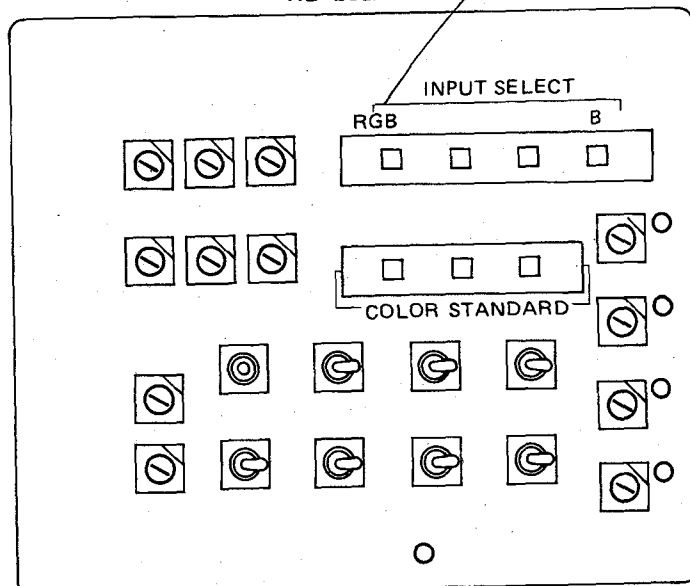
Fig. 3-5

RGB ☐ ON

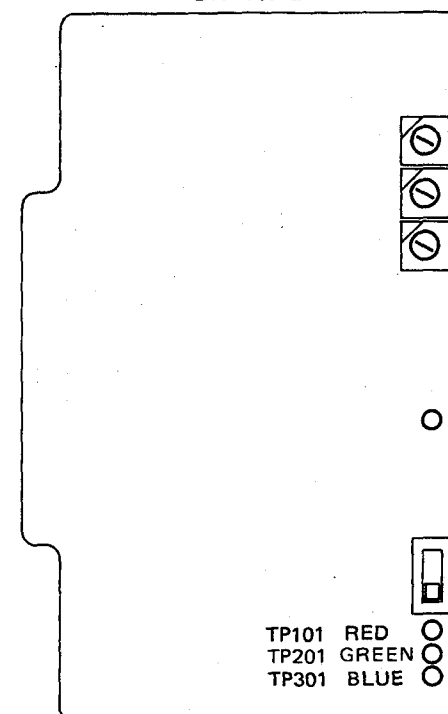
## **FRONT PANEL (R)**



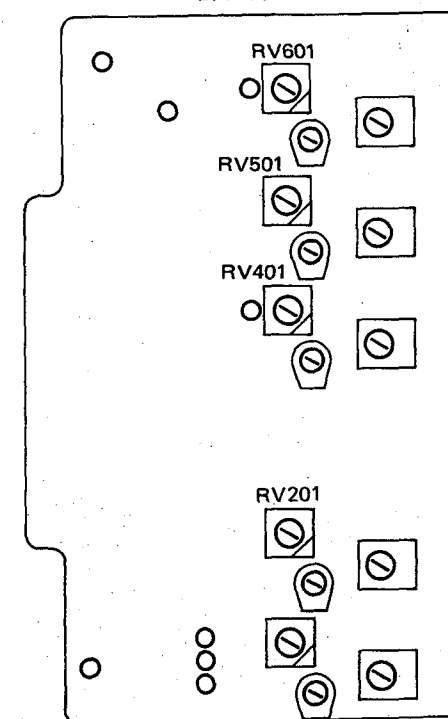
## **HB board**



## **BH board**



## **BA board**



#### 4. BA Board INPUT CIRCUIT FREQUENCY CHARACTERISTIC ADJUSTMENT

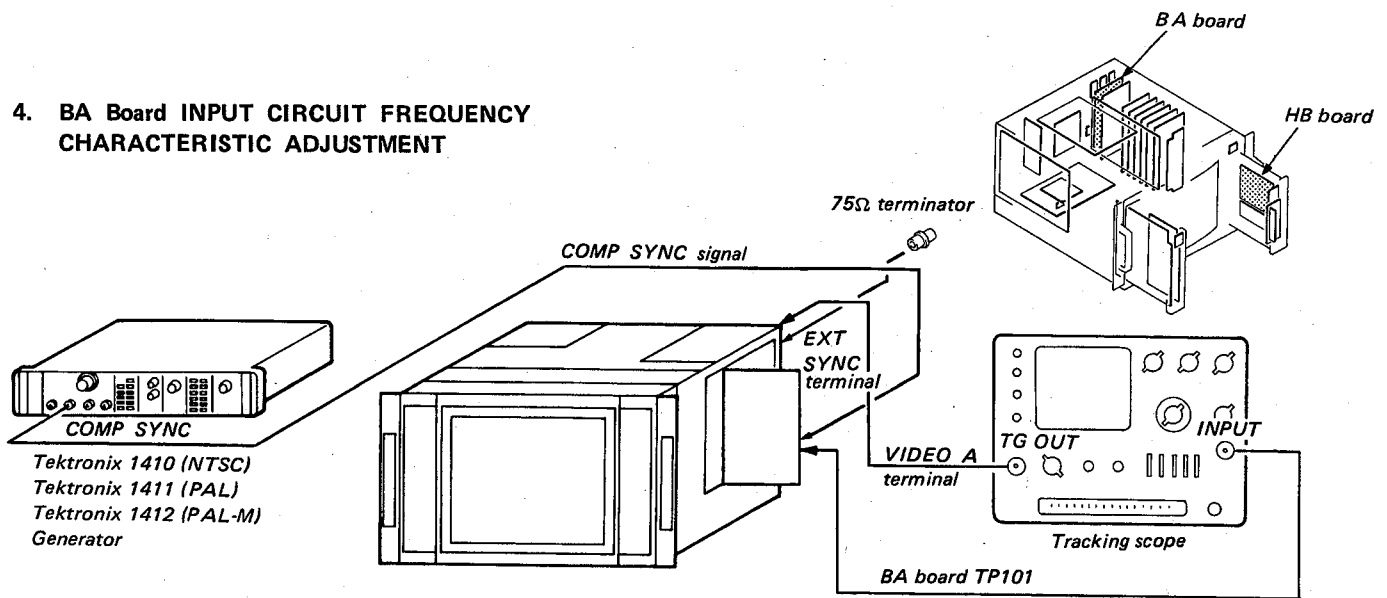


Fig. 4-1

- Complete the connection as shown in Fig. 4-1.
  - INPUT selector . . . . . A (A)
  - SYNC selector . . . . . EXT (EXT)
  - CONTRAST control . . . . . Minimum
  - BRIGHTNESS control . . . . . Minimum
- Adjust CV101 so that minimum as shown in Fig. 4-2.

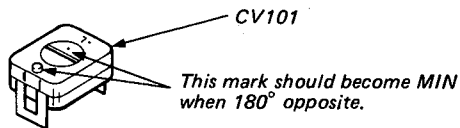


Fig. 4-2

- Adjust output waveform peak to 12MHz with CV102 of the BA board as shown in Fig. 4-3.

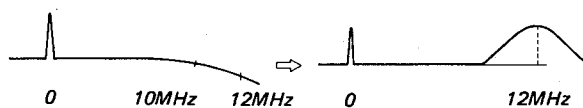


Fig. 4-3

- Adjust CV101 of the BA board so that the output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 4-4.

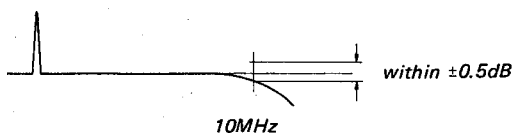
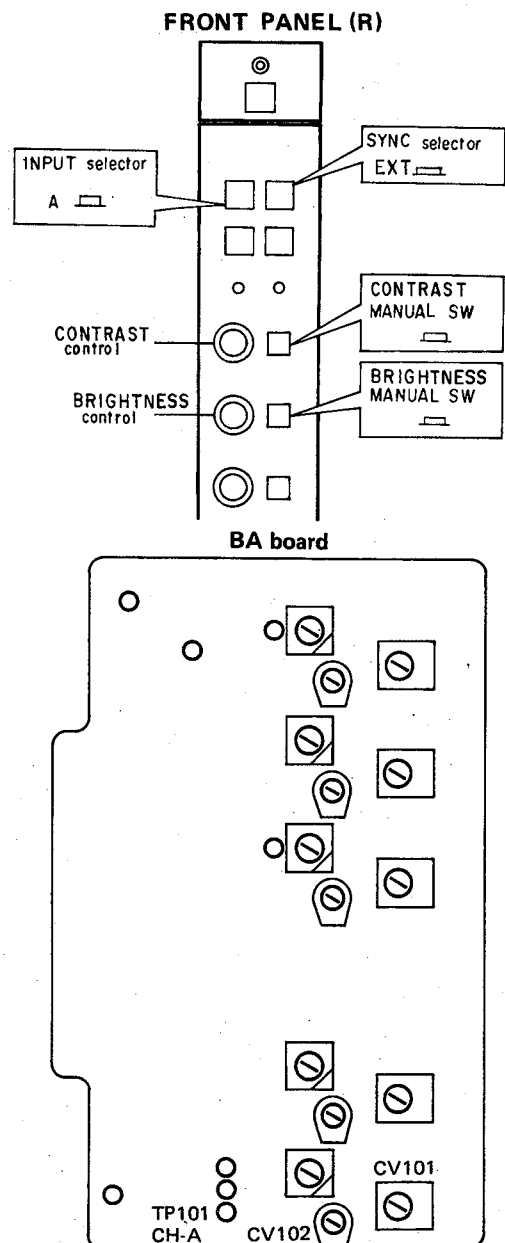


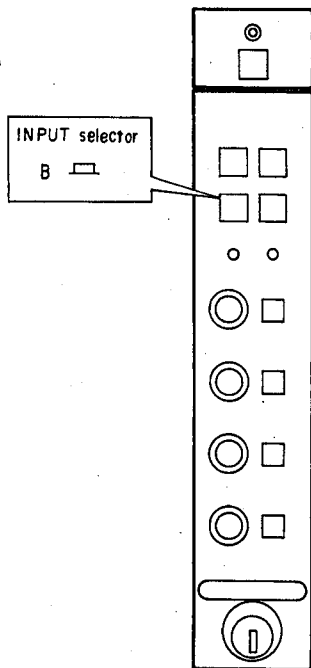
Fig. 4-4



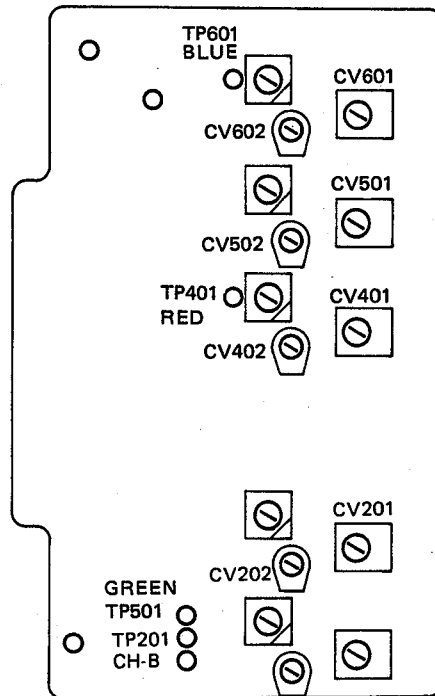
5. In the same way, perform the adjustment for B CH, under the following conditions.

INPUT	INPUT selector (FRONT PANEL (A))	INPUT SELECT buttons (SUB CONTROL PANEL)	TP (BA board)	CV (BA board)
B	B	B	TP201	CV201, 202
R/R-Y	B	RGB	TP401	CV401, 402
G/Y/TEST	B	RGB	TP501	CV501, 502
B/B-Y	B	RGB	TP601	CV601, 602

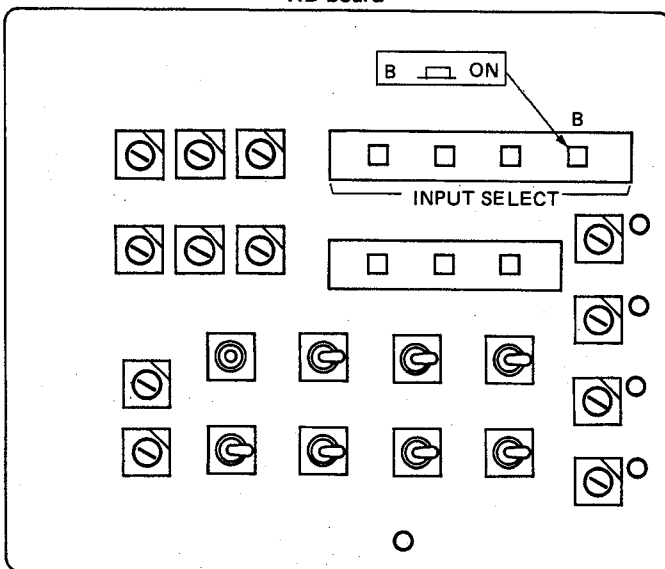
FRONT PANEL (R)



BA board



HB board



## 5. BG Board FREQUENCY CHARACTERISTIC ADJUSTMENT

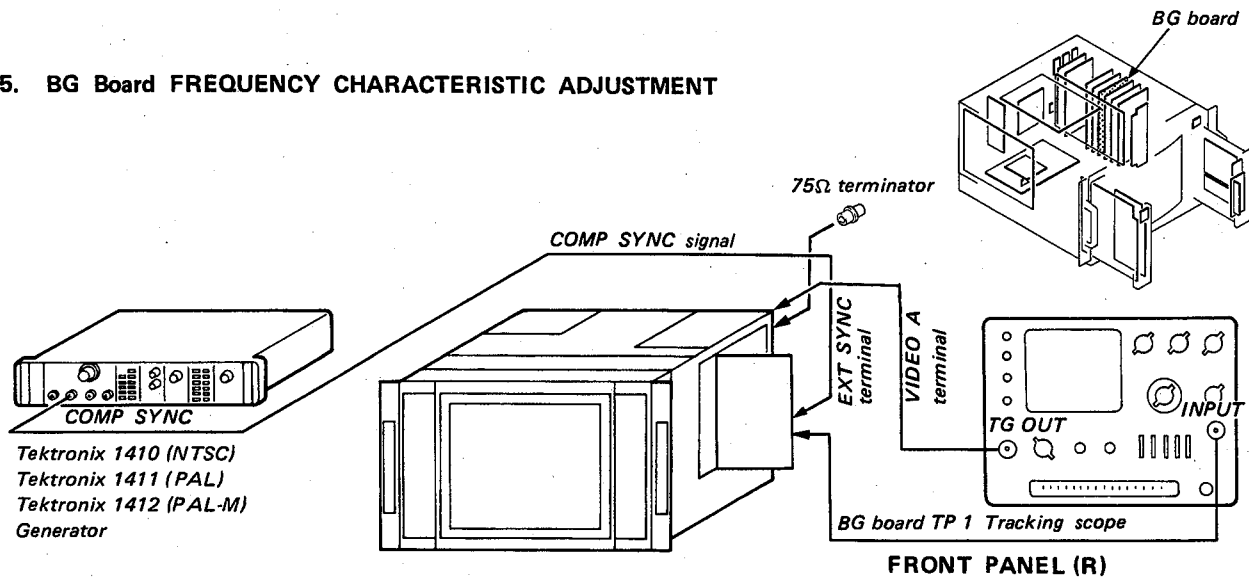


Fig. 5-1

- Complete the connections as shown in Fig. 5-1.
  - INPUT selector (FRONT PANEL (R)) . . . . . A ( ☐ )
  - SYNC selector (FRONT PANEL (R)) . . . . . EXT ( ☐ )
  - CONTRAST control . . . . . Minimum
  - BRIGHTNESS control . . . . . Minimum
  - S1 (BG Board) . . . . . 4.5MHz ( 4.5 ☐ 6.5 )
- Adjust RV1, CV2 and CV3 of the BG board so that the output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 5-2. (within  $0 \pm 0.5\text{dB}$ )

\*Waveform movement by RV1, CV2, CV3

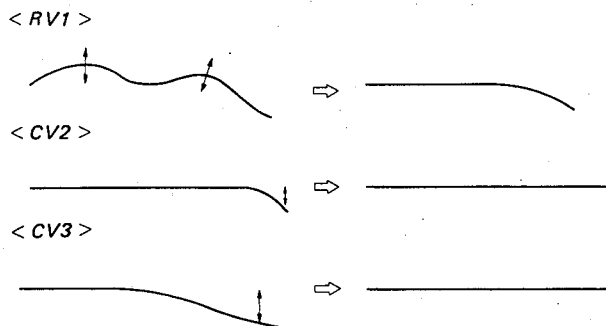
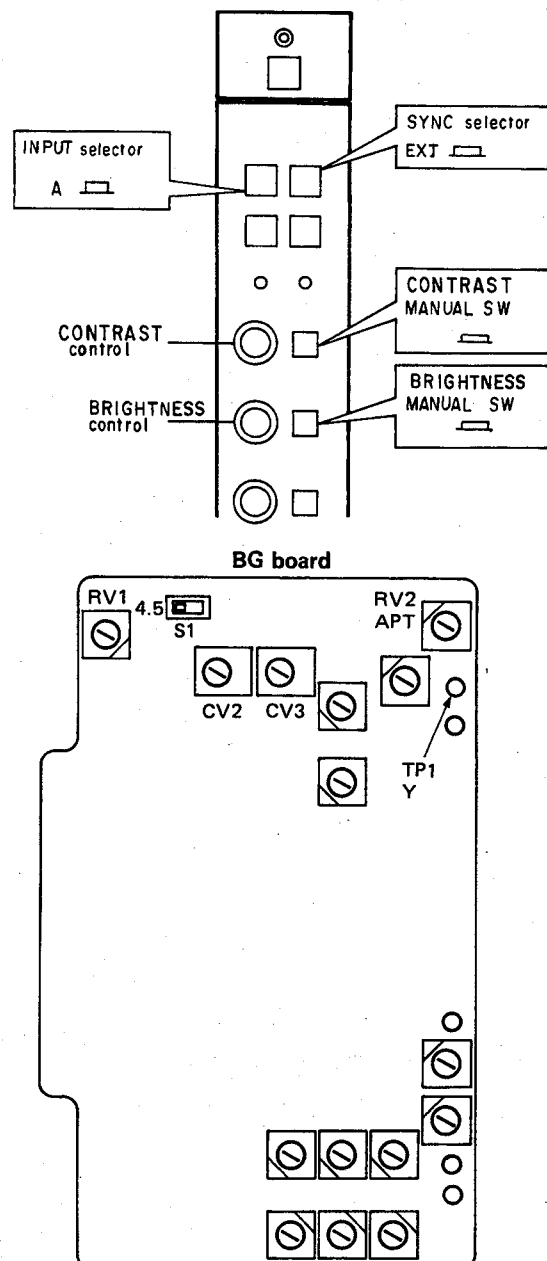


Fig. 5-2

- Adjust with RV2 (BG board) to the position in which the APT (Fig. 5-3.) begins to become effective.



Fig. 5-3



## 6. COMPONENT INPUT LEVEL ADJUSTMENT

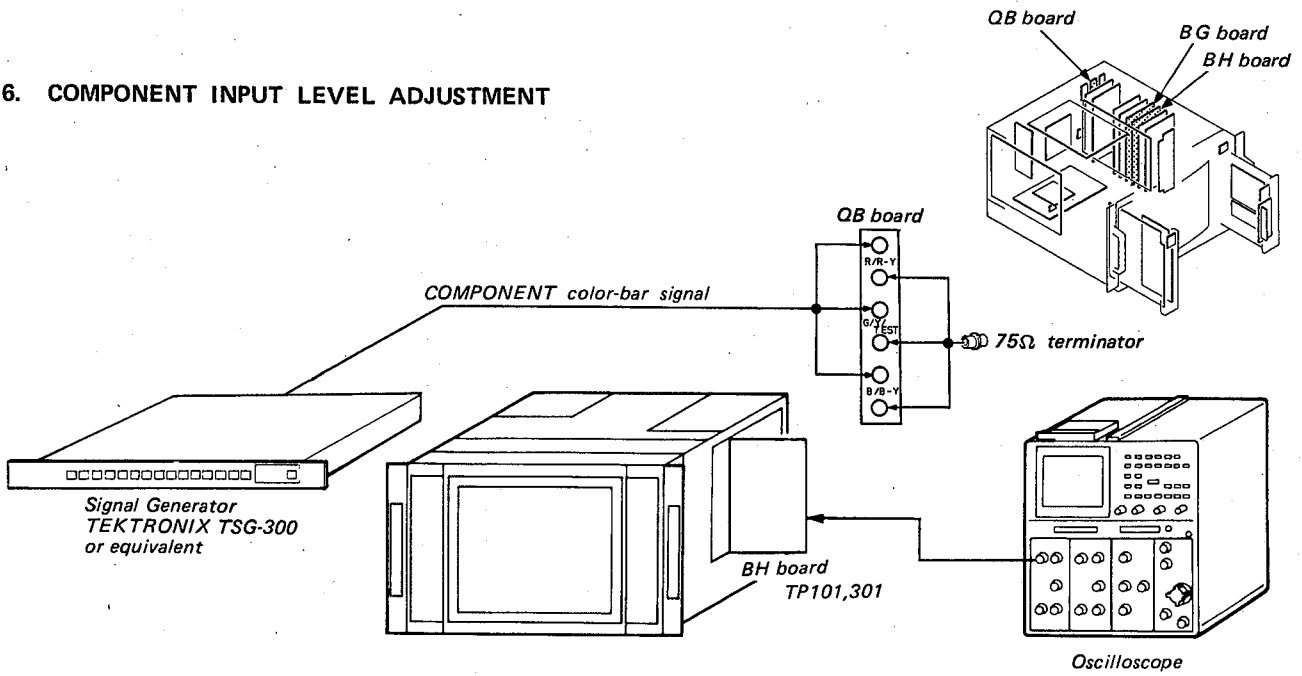


Fig. 6-1

- Complete the connections as shown in Fig. 6-1.
  - INPUT selector ..... B (FRONT PANEL (R))
  - INPUT SELECT buttons (RIGHT SIDE DRAWER) (HB board) ..... COMPONENT
- Connect an oscilloscope to the TP-101 of BH board.
- Adjust RV21 of BG board so that the output waveform becomes flat. (Fig. 6-2)

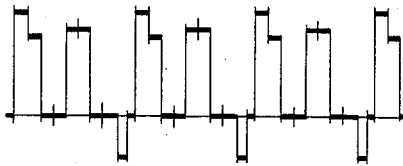


Fig. 6-2

- Connect an oscilloscope to the TP301 of BH board.
- Adjust RV22 of BG board so that the input waveform becomes flat. (Fig. 6-3)

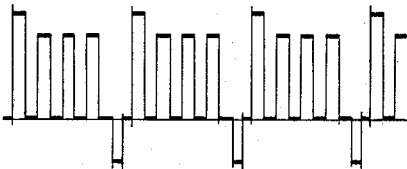
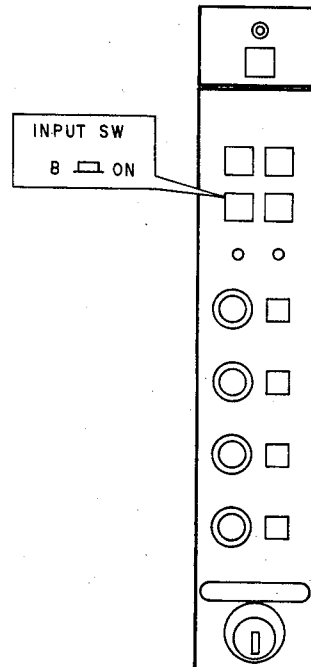
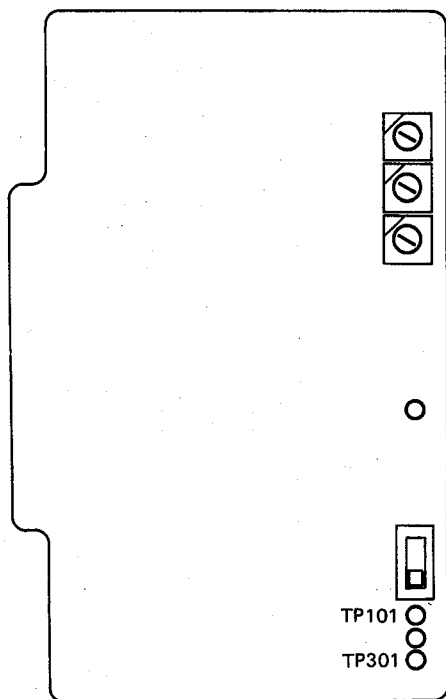


Fig. 6-3

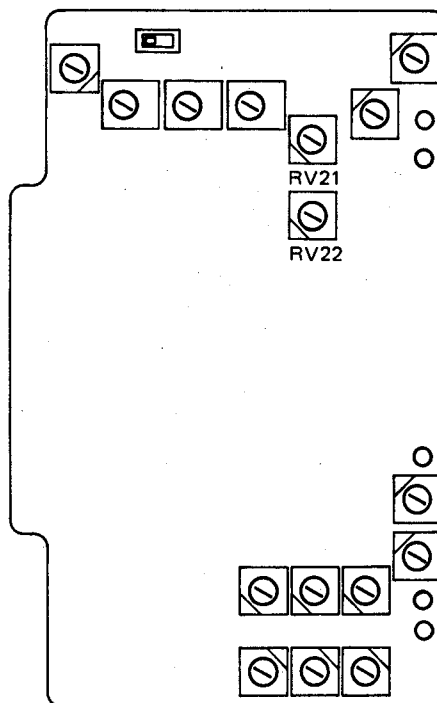
### FRONT PANEL (R)



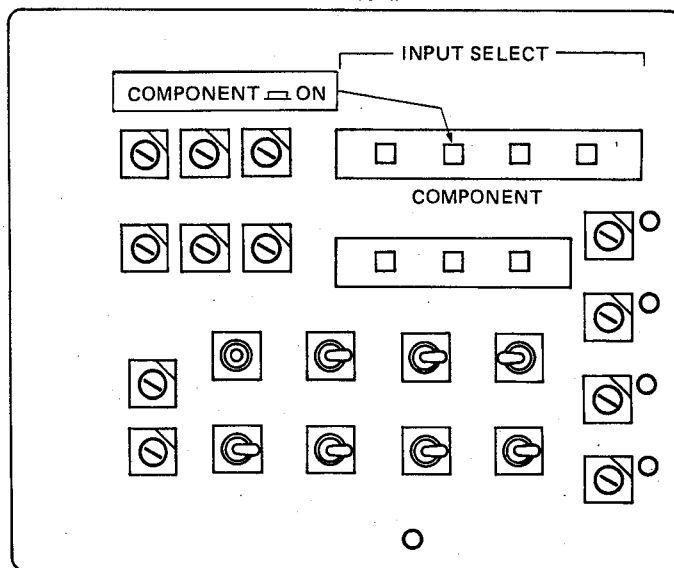
BH board



BG board

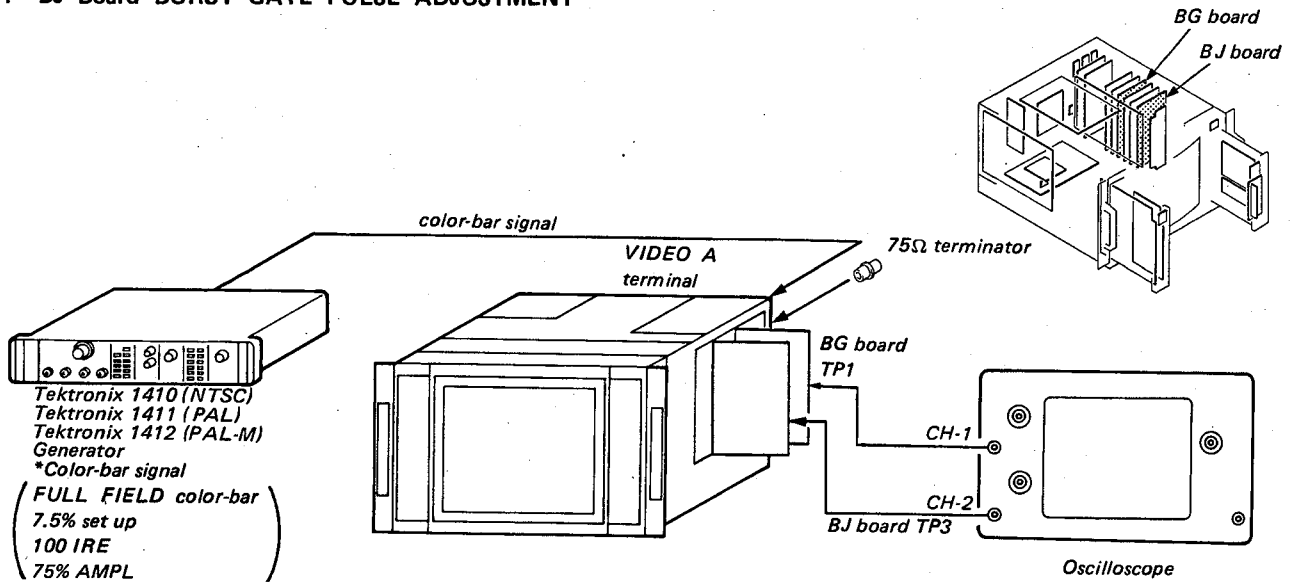


HB board

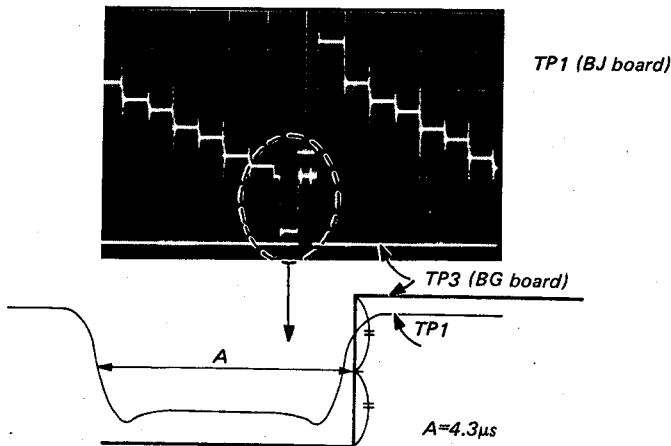




## 7. BJ Board BURST GATE PULSE ADJUSTMENT



1. Input a color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP3 of BJ board.
3. Adjust RV8 of BJ board so that the A is  $4.3\mu s$  as shown in Fig. 7-1.



\* Adjust (A), from SYNC fall to B.G.P. (BURST GATE PULSE) rise, to  $4.3\mu s$ .

Fig. 7-1

4. Adjust RV4 of BJ board so that the burst gate pulse width is  $4.5\mu s$  as shown in Fig. 7-2.

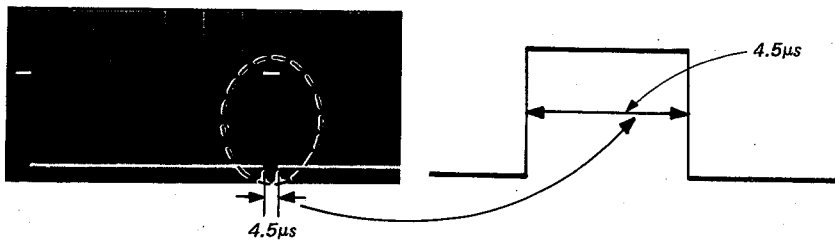
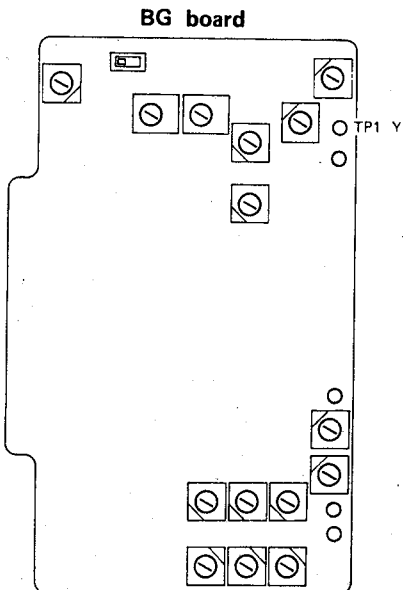
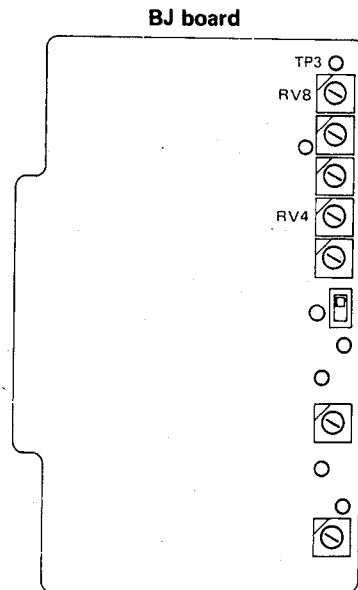
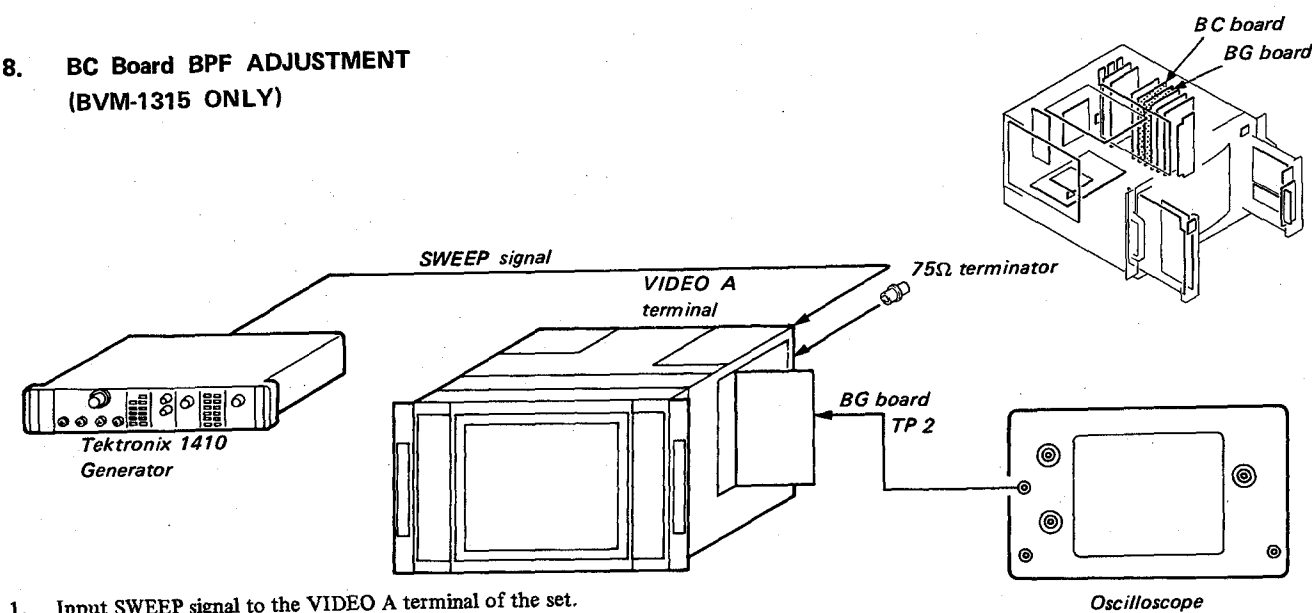


Fig. 7-2



8. BC Board BPF ADJUSTMENT  
(BVM-1315 ONLY)



1. Input SWEEP signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP2 on the BG board.
3. Make the V/dw of oscilloscope into VARIABLE, and match the upper section of waveform to 7 div as shown in Fig. 8-1.

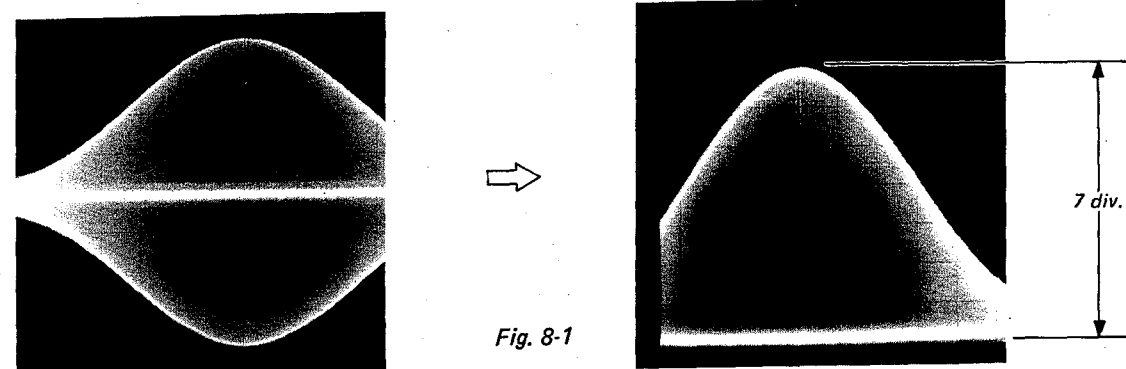


Fig. 8-1

4. Adjust L3 on the BC board so that A is equal to B as shown in Fig. 8-2.

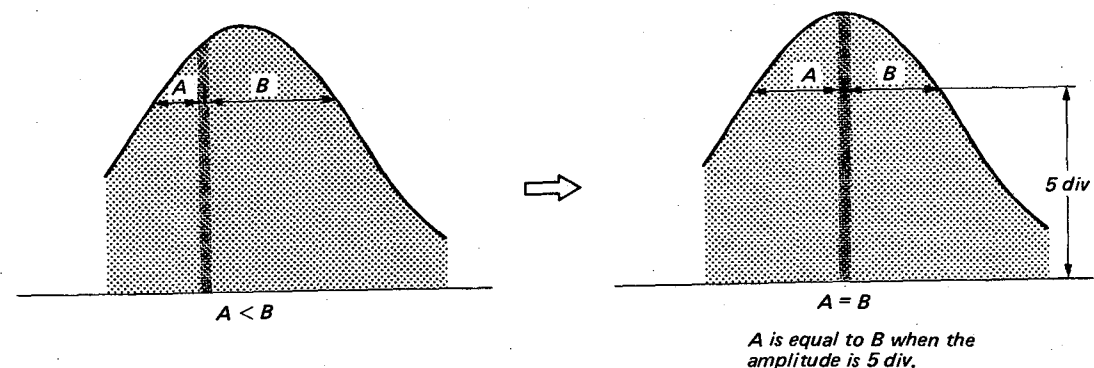
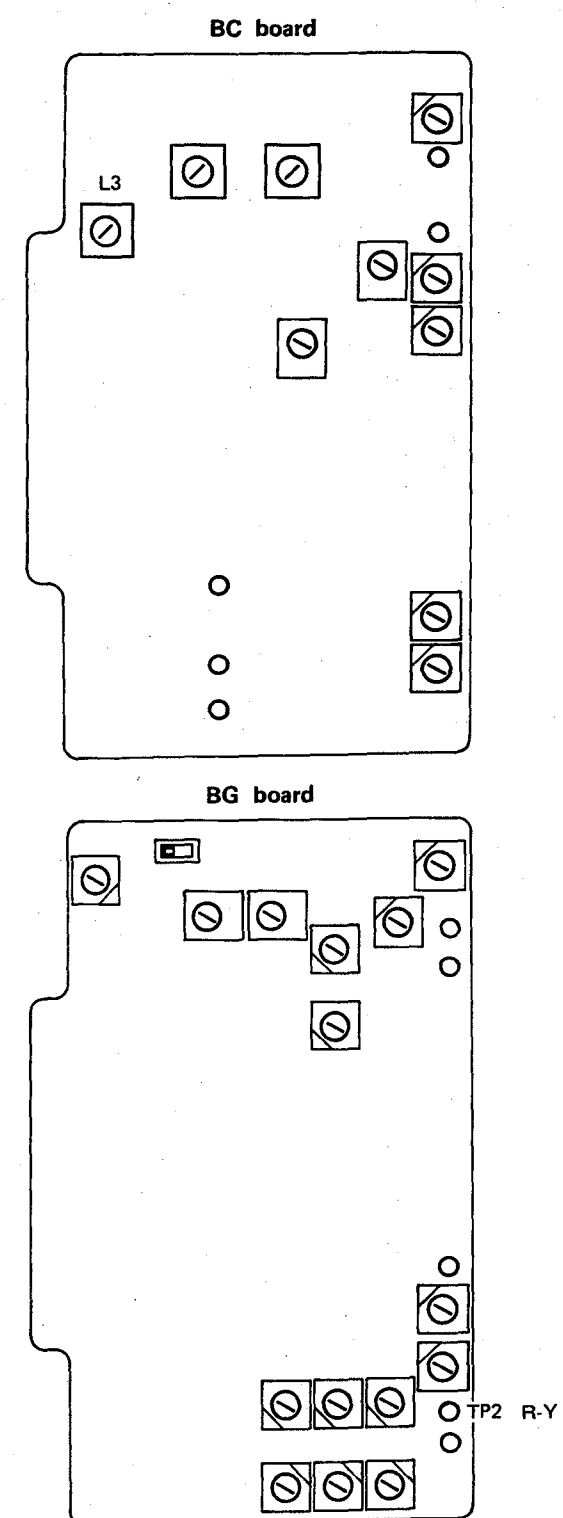


Fig. 8-2



9. BC Board PHASE SHIFT ADJUSTMENT  
(BVM-1315 ONLY)

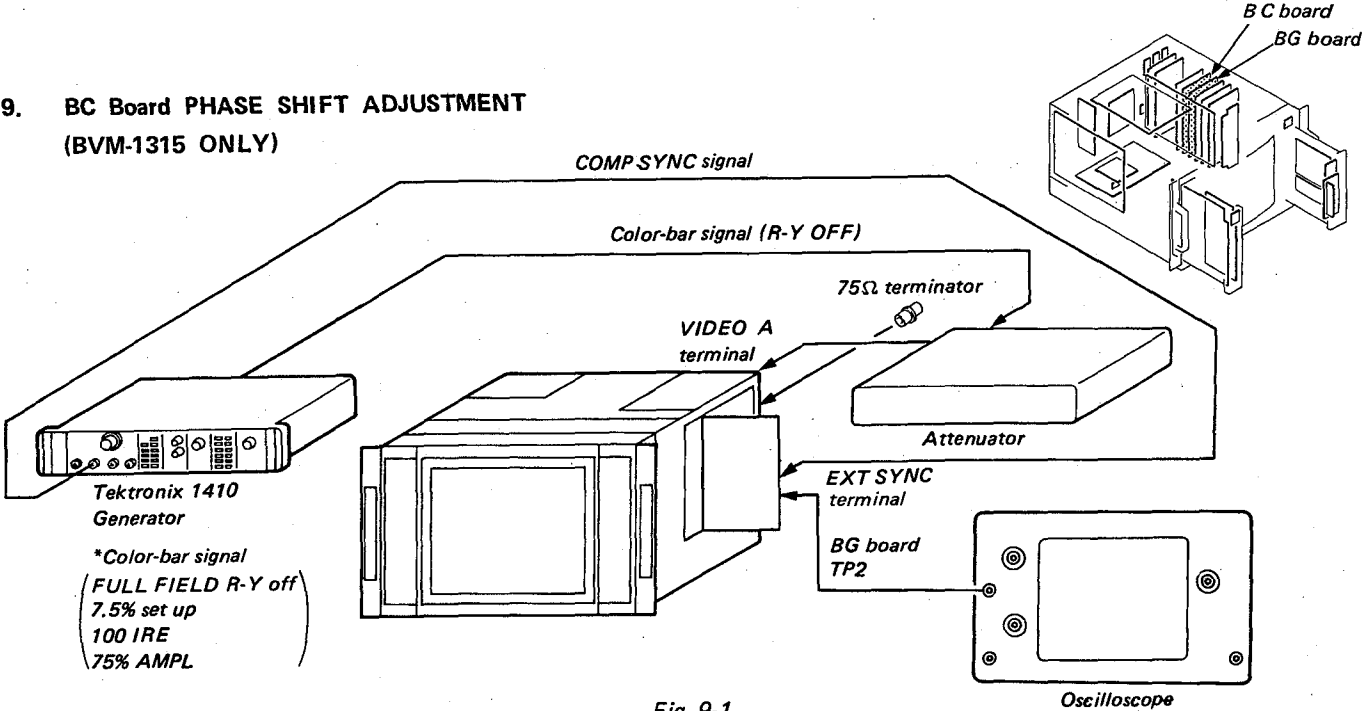


Fig. 9-1

- Complete the connection as shown in Fig. 9-1.
  - INPUT selector (FRONT PANEL (R)) . . . . . A (A)
  - SYNC selector (FRONT PANEL (R)) . . . . . EXT (EXT)
- Connect an oscilloscope to the TP2 on the BG board.
- Make the waveform flat with the PHASE control of front panel (R) as shown in Fig. 9-2.

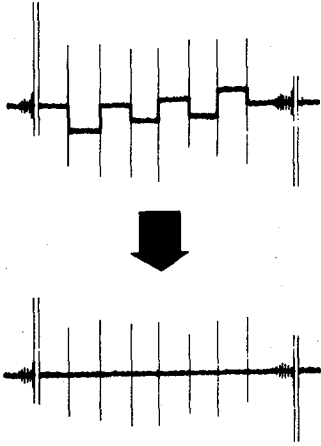
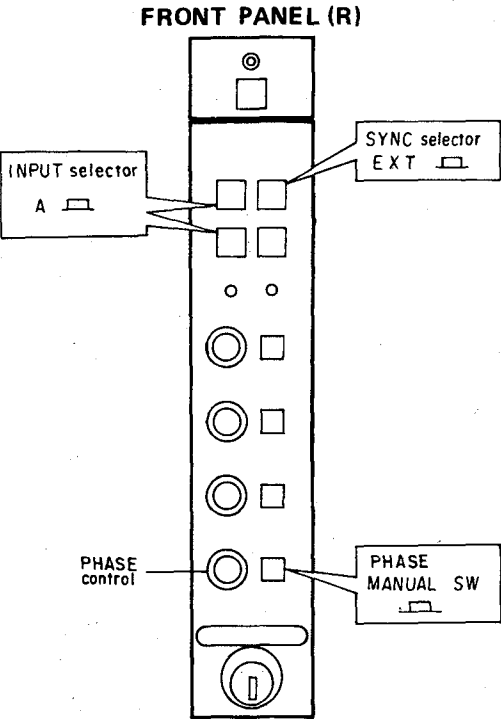
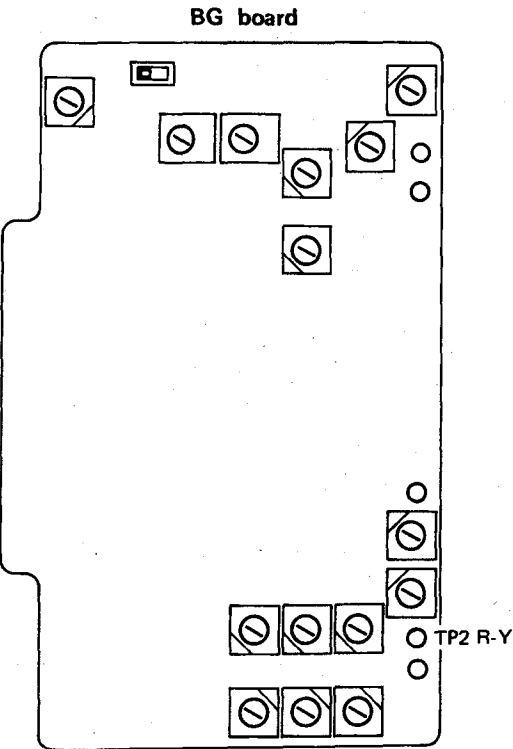
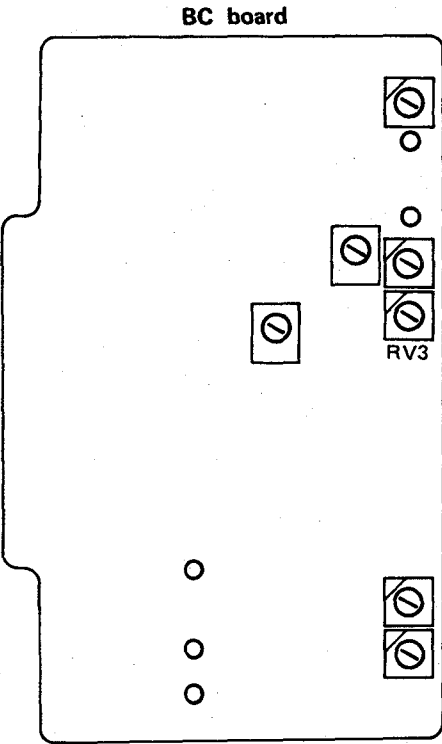


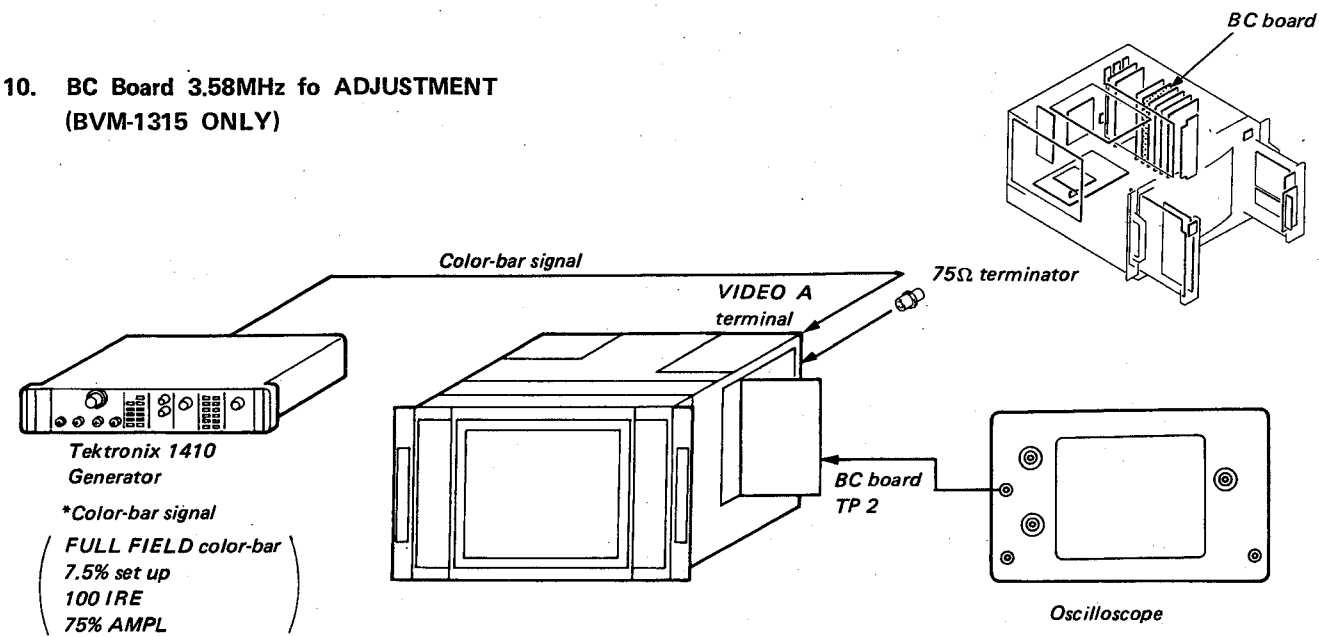
Fig. 9-2



- Attenuate the signal by 10dB by using attenuator.
- Adjust RV3 on the BC board so that the output waveform becomes flat as shown in Fig. 9-2.
- Restore the attenuator to 0dB.
- Repeat the steps 3 to 5.



10. BC Board 3.58MHz fo ADJUSTMENT  
(BVM-1315 ONLY)



1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP2 of BC board.
3. Short-circuit between TP ⑥ and ⑦ of BC board with a jumper wire.
4. Adjust CV2 of BC board so that the output waveform is shifted slowly as shown in Fig. 10-1.
5. Turn off the power of this monitor, and disconnect TP ⑥ and ⑦ of BC board.

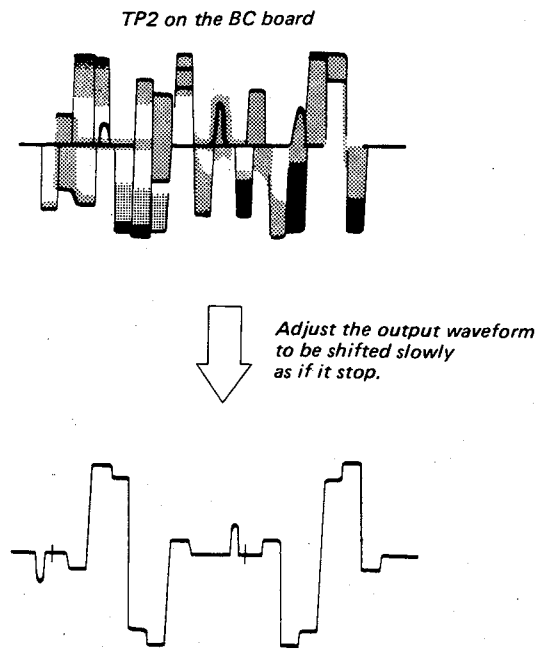
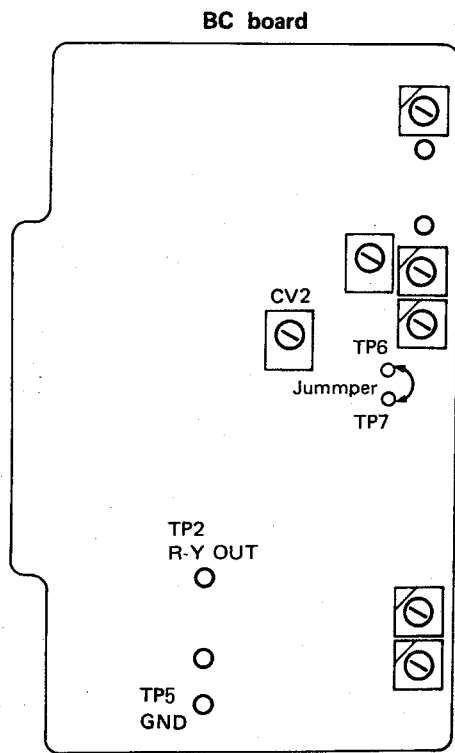


Fig. 10-1



# 11. BC Board COLOR DIFFERENCE PHASE ADJUSTMENT (BVM-1315 ONLY)

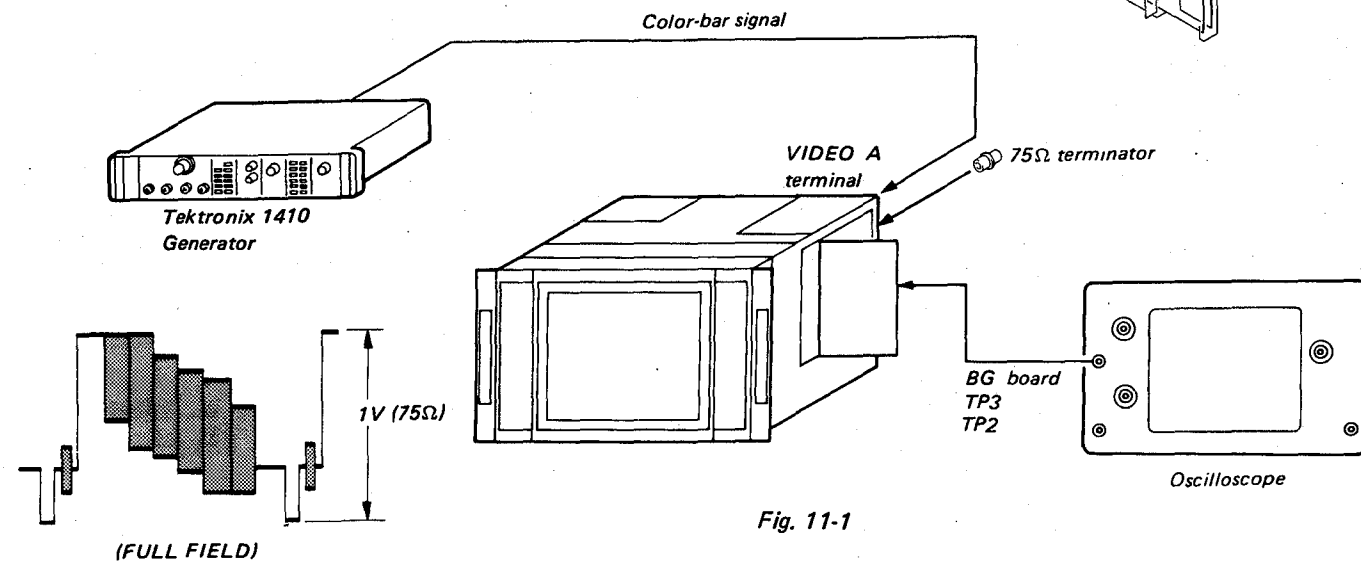


Fig. 11-1

1. Complete the connections as shown in Fig. 11-1.
2. Turn on the power of this monitor.

## B-Y System Adjustment

3. Connect the oscilloscope probe to TP3 on the BG board, and turn off the (B-Y) signal of the signal generator.
4. Set the oscilloscope sensitivity to 20mV/DIV, and adjust RV2 on the BC board so that the output waveform is flat. (See Fig. 11-2.)

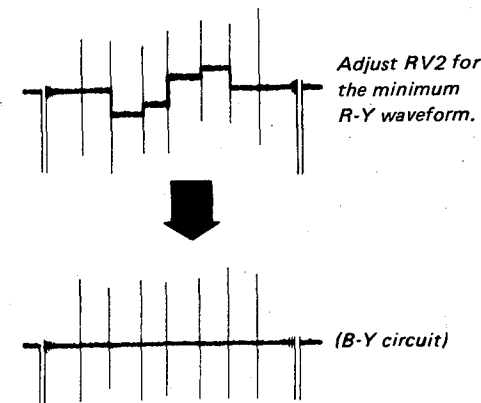


Fig. 11-2

## Quad Adjustment

5. Connect the oscilloscope probe to TP2 on the BG board. Turn on the B-Y signal of the signal generator, and turn off the (R-Y) signal. Then adjust CV1 on the BC board so that the output waveform is flat. (See Fig. 11-3)
6. Repeat the steps 3 to 6.

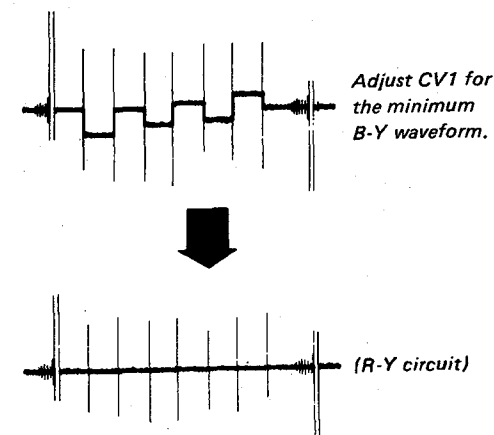
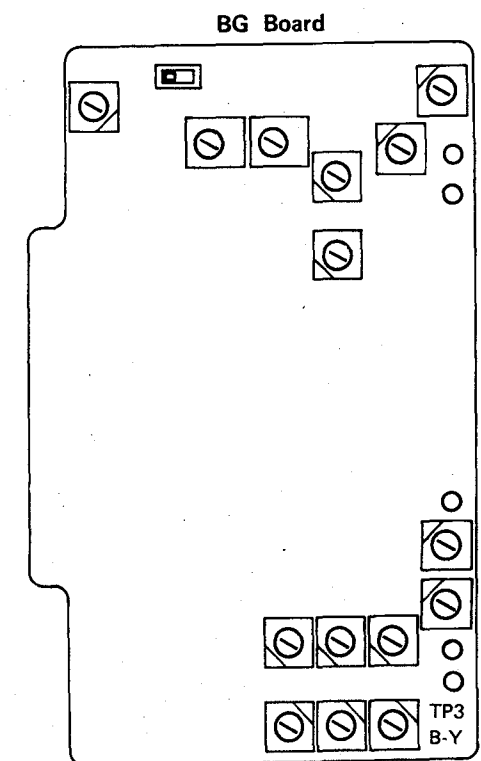
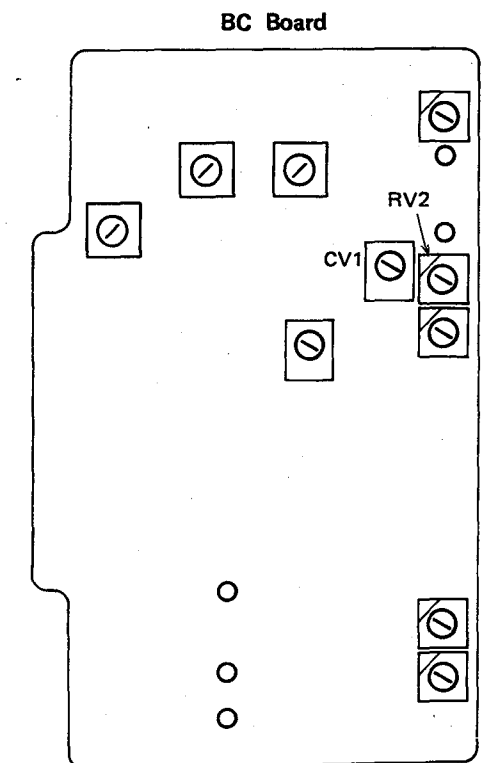
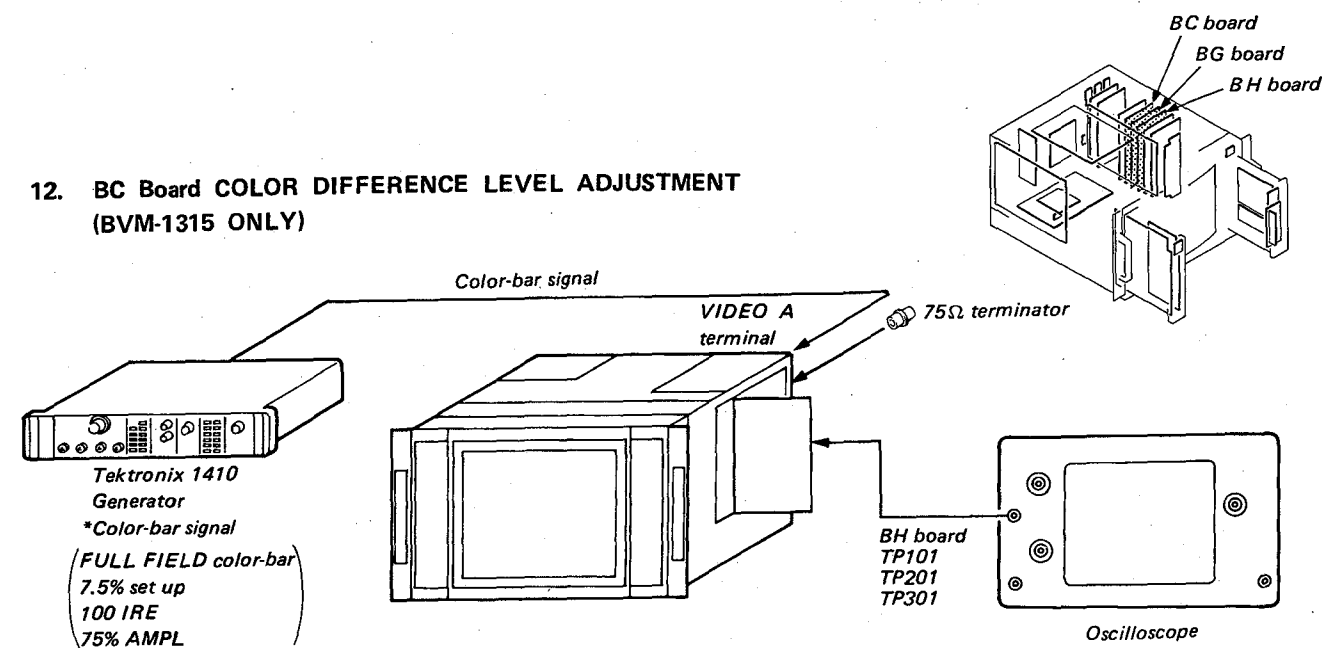


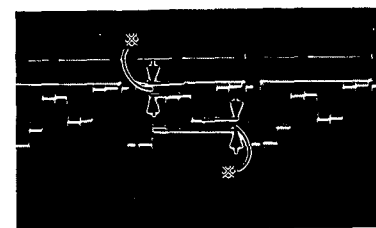
Fig. 11-3



## 12. BC Board COLOR DIFFERENCE LEVEL ADJUSTMENT (BVM-1315 ONLY)



1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP101 of BH board.
3. Eliminate interval in the output waveform (mark \* in Fig. 12-1) with RV4.

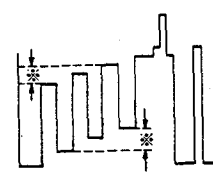


TP101 R OUT

Fig. 12-1

\* Bring \* marked levels to zero respectively with RV4 on the BC board.

4. Connect an oscilloscope to the TP301 of BH board.
5. Adjust RV5 of BC board so that the output waveform as shown in Fig. 12-2.



TP103 B OUT

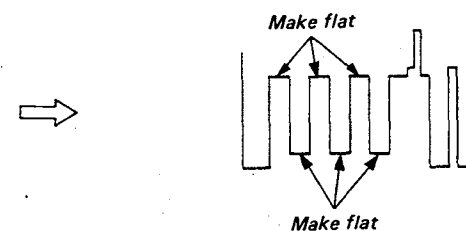
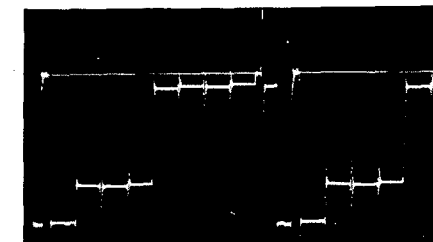


Fig. 12-2

6. Connect an oscilloscope to the TP201 of BH board.
7. Adjust RV4 and RV5 of BG board so that the INPUT waveform becomes flat as shown in Fig. 12-3.



TP201 G OUT

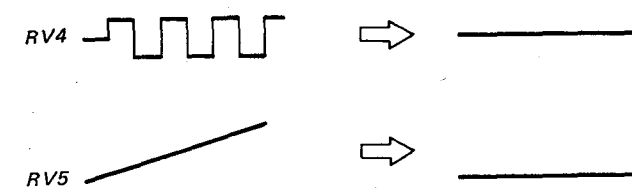
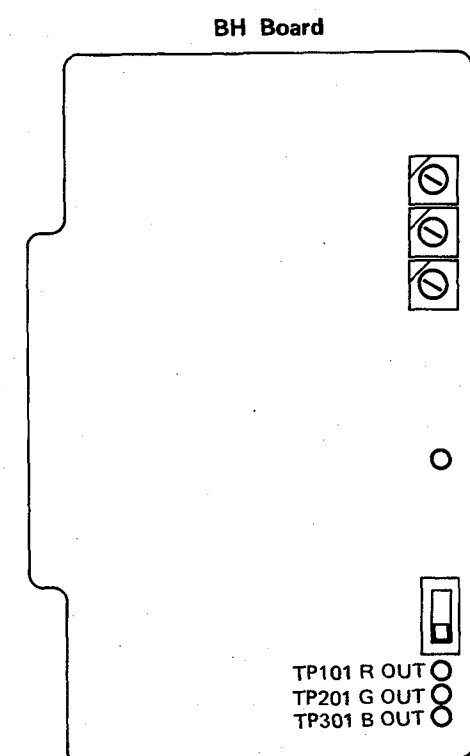
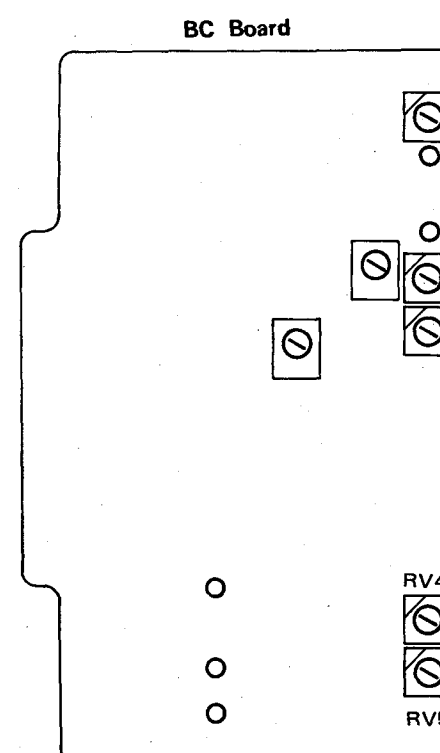
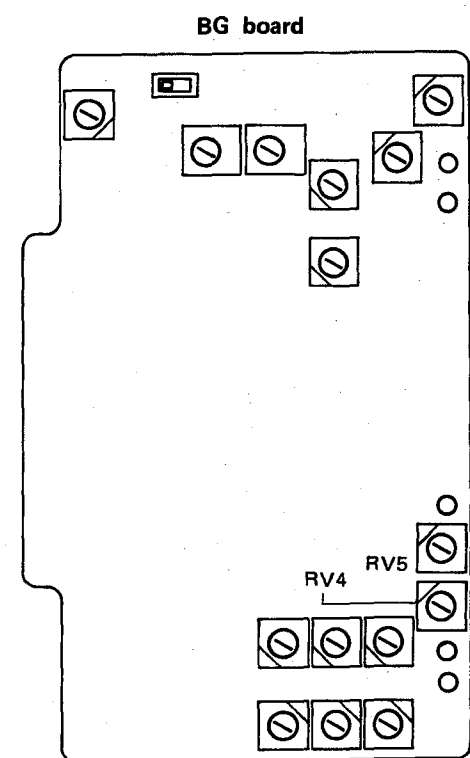
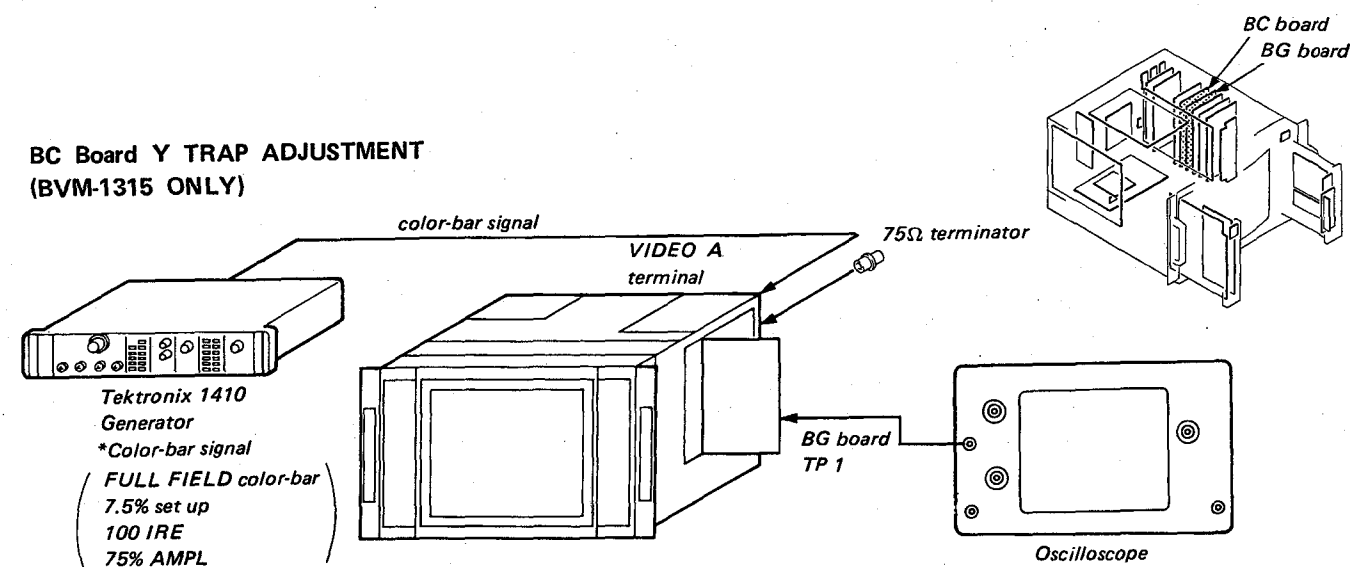


Fig. 12-3



### 13. BC Board Y TRAP ADJUSTMENT (BVM-1315 ONLY)



1. Input color-bar signal to VIDEO A terminal of the set.
  - INPUT selector (FRONT PANEL (R)) . . . . . A ( )
  - COLOR STANDARD buttons (SUB CONTROL PANEL) . . . . . NTSC ( )
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L1 of BC board so that 3.58MHz subcarrier is minimum as shown in Fig. 13-1.

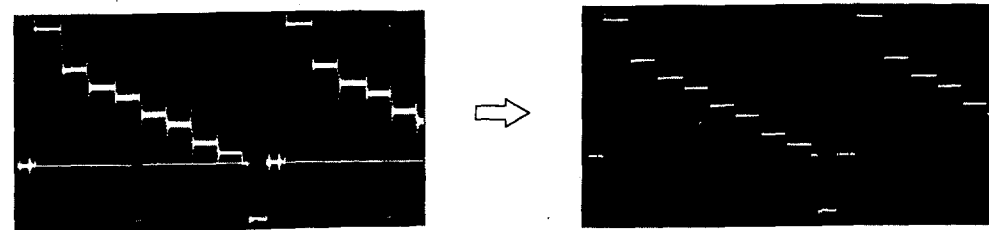
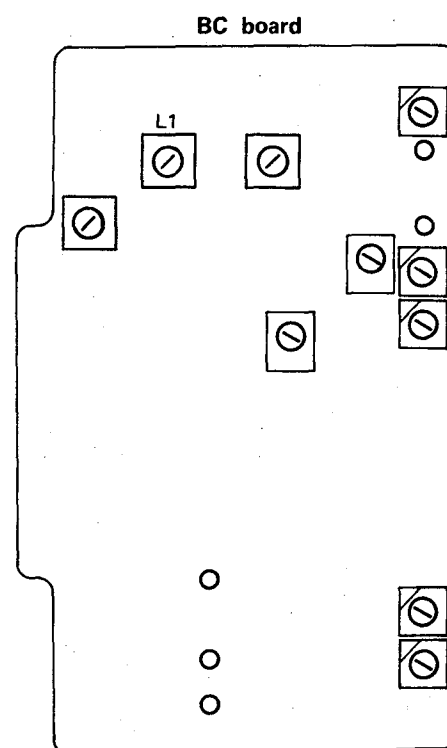
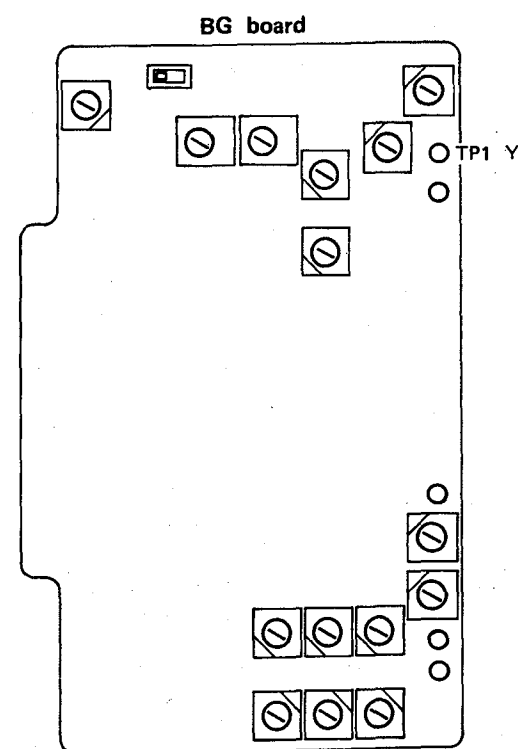
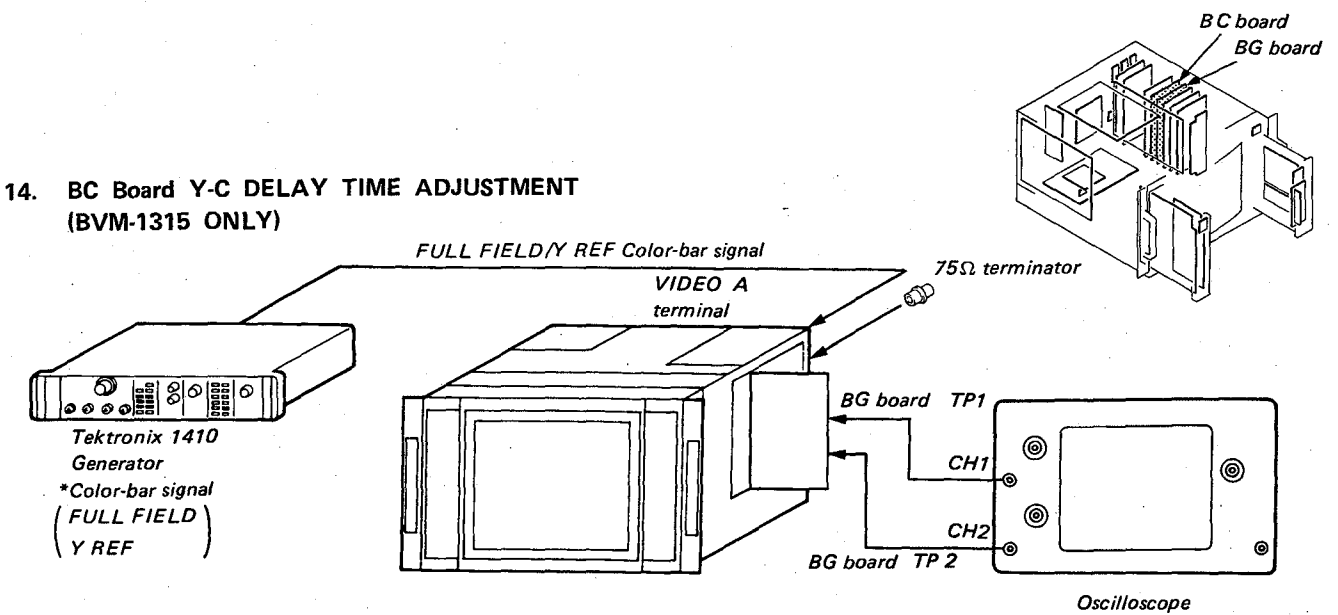


Fig. 13-1



### 14. BC Board Y-C DELAY TIME ADJUSTMENT (BVM-1315 ONLY)



1. Input color-bar signal (FULL FIELD/Y REF) to the VIDEO A terminal of the set.
2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP2 of BG board (VERT mode of the oscilloscope is CHOP).
3. Adjust RV1 of BC board so that the output waveform as shown in Fig. 14-1.

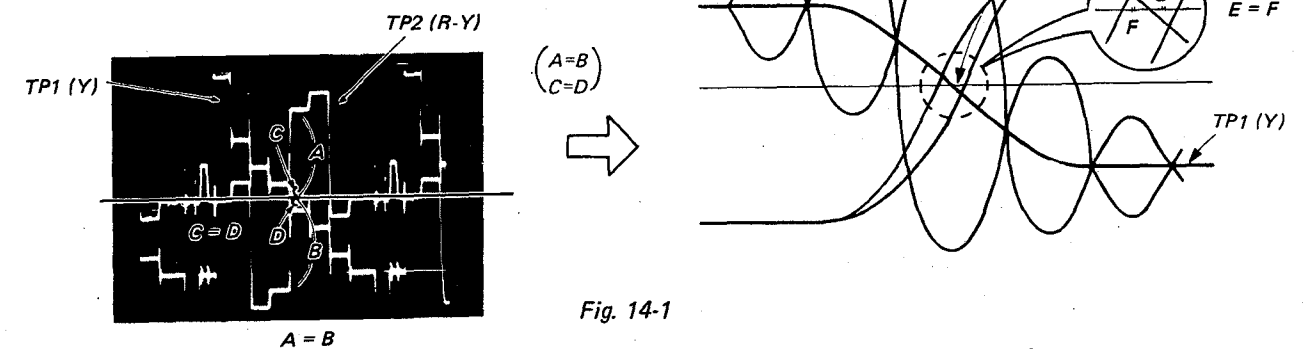
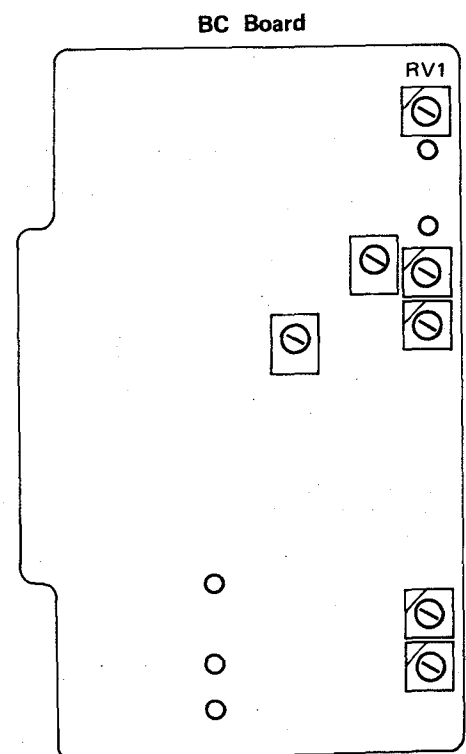
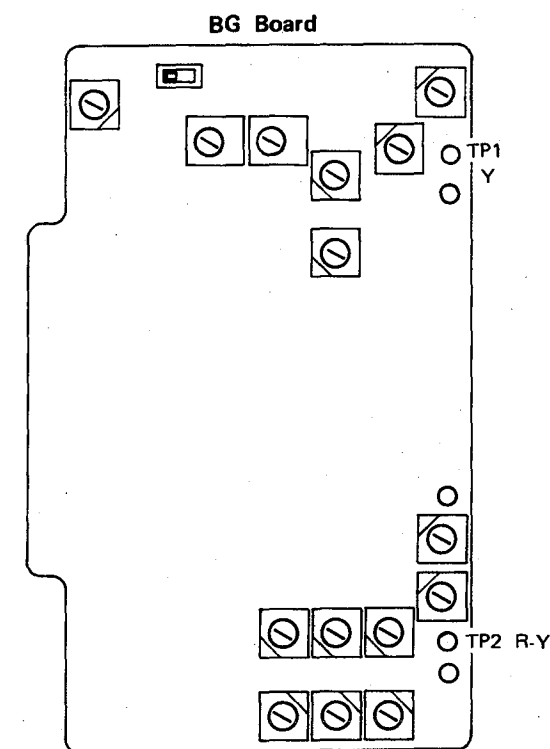
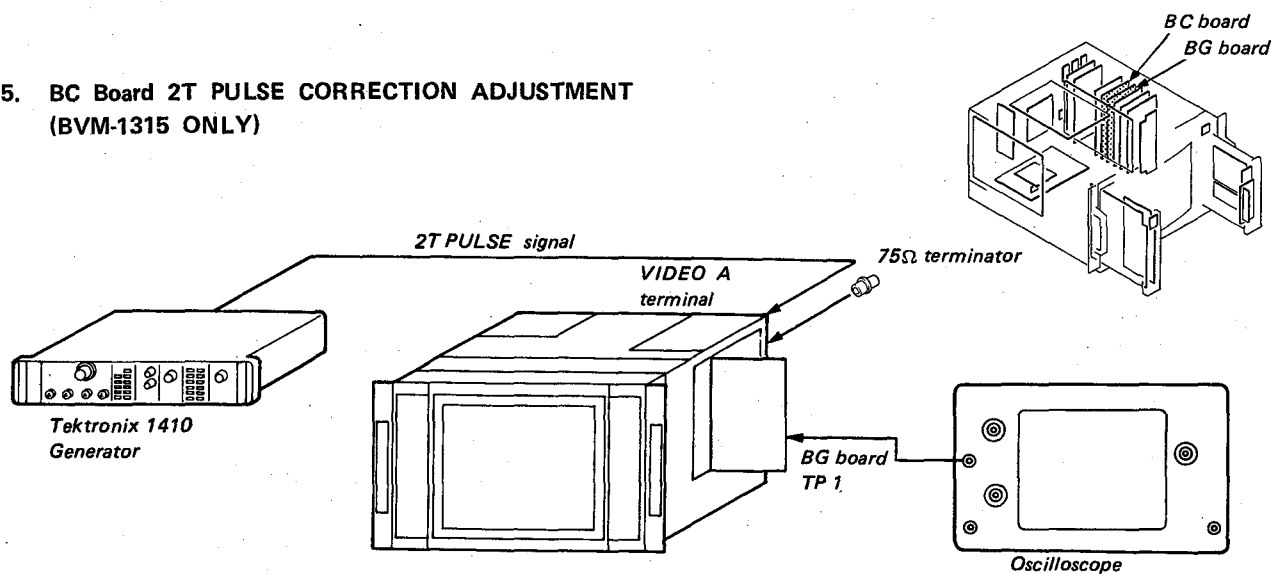


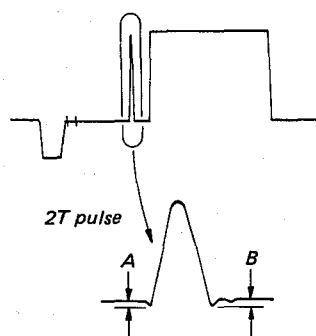
Fig. 14-1



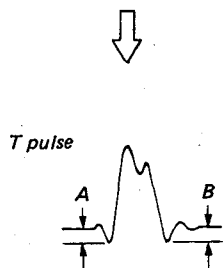
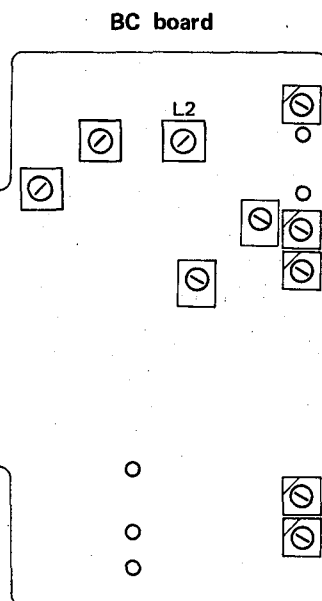
# 15. BC Board 2T PULSE CORRECTION ADJUSTMENT (BVM-1315 ONLY)



1. Input 2T pulse signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L2 of BC board so that A is equal to B as shown in Fig. 15-1.
4. Change the input signal from 2T pulse to T pulse, and make sure the waveform balance is not lost extremely as shown in Fig. 15-1.



\* Adjust L2 to obtain the condition  $A = B$ .



\* The waveform balance should not be lost extremely.

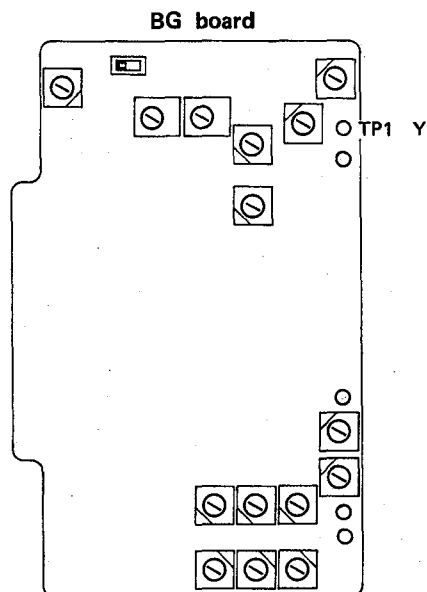
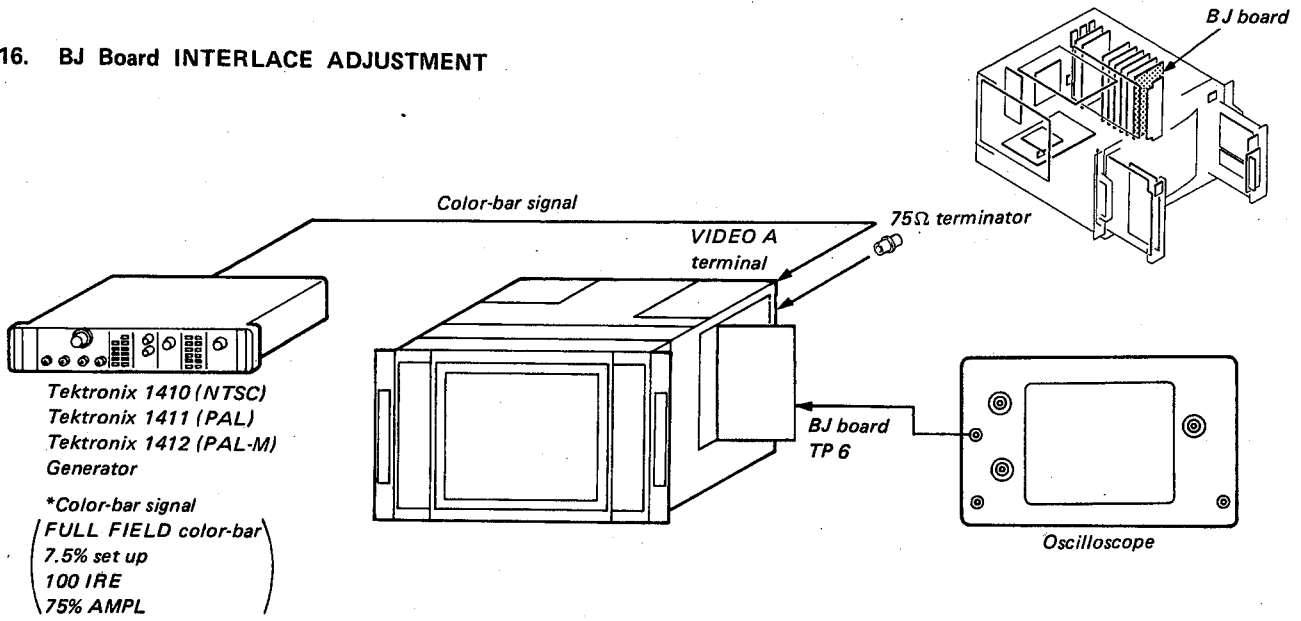


Fig. 15-1



## 16. BJ Board INTERLACE ADJUSTMENT



1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP6 on the BJ board.
3. Adjust RV6 to obtain the waveform on the oscilloscope as shown in Fig. 16-1.

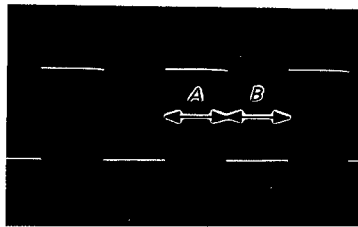
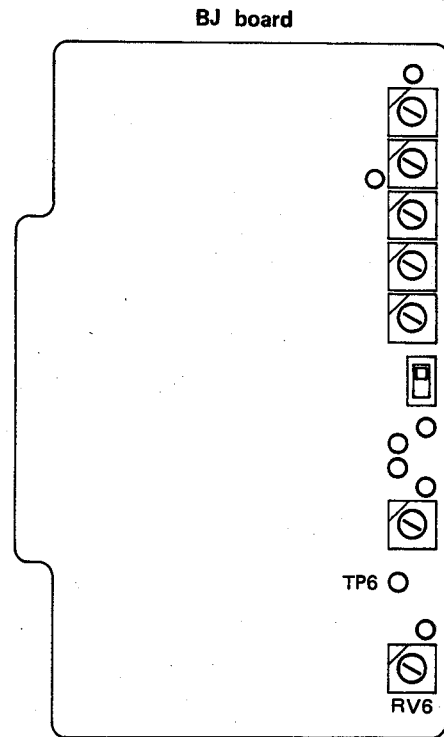
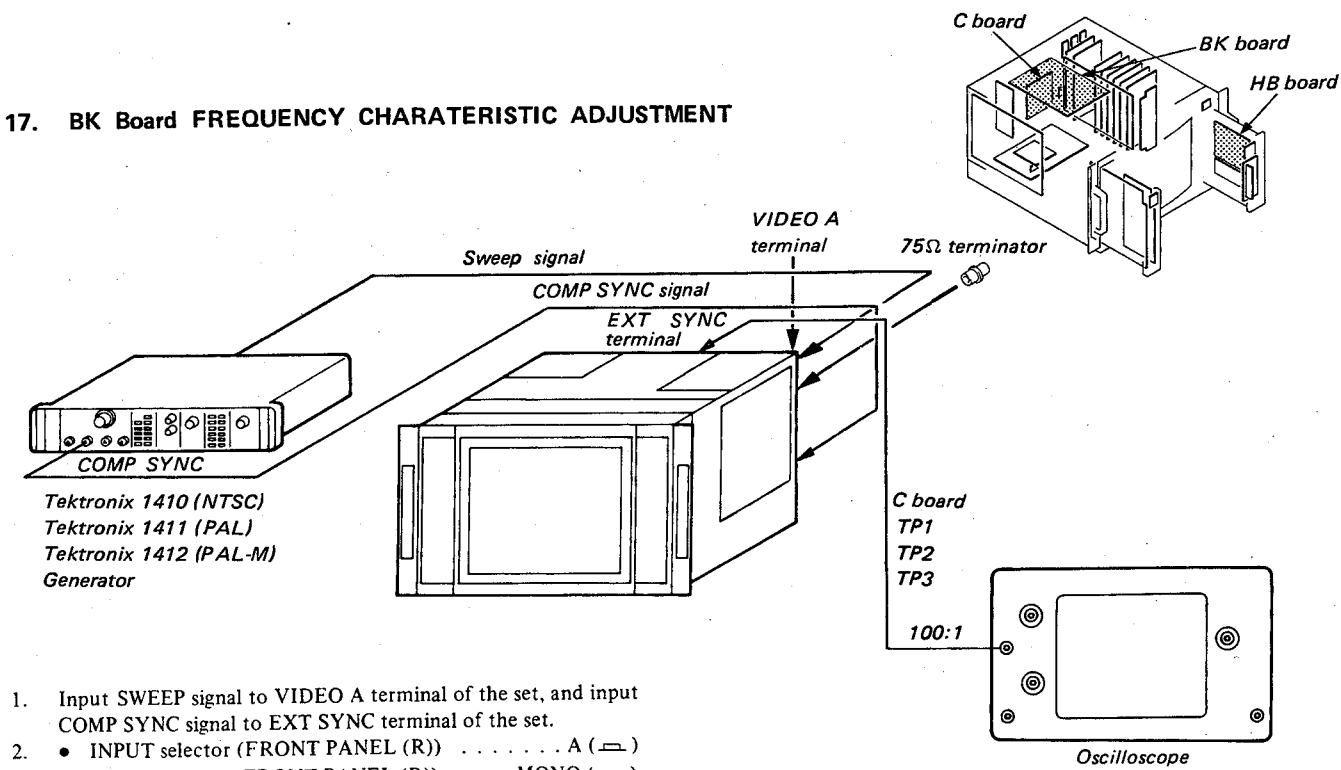




Fig. 16-1



17. BK Board FREQUENCY CHARACTERISTIC ADJUSTMENT



1. Input SWEEP signal to VIDEO A terminal of the set, and input COMP SYNC signal to EXT SYNC terminal of the set.
2. • INPUT selector (FRONT PANEL (R)) . . . . . A (  )  
• MODE selector (FRONT PANEL (R)) . . . . . MONO (  )  
• FILTER SW. (HB board S8) . . . . . OFF
3. Connect an oscilloscope to the TP1 on the C board.  
\*Probe: 100:1
4. Adjust CV101 and RV101 on the BK board so that output waveform becomes flat in a range of 0 to 8MHz as shown in Fig. 17-1.
5. Connect an oscilloscope to the TP2 on the C board.
6. Adjust CV201 and RV201 on the BK board so that output waveform becomes flat in a range of 0 to 8MHz as shown in Fig. 17-1.
7. Connect an oscilloscope to the TP3 on the C board.
8. Adjust CV301 and RV301 on the BK board so that output waveform becomes flat in a range of 0 to 8MHz as shown in Fig. 17-1.

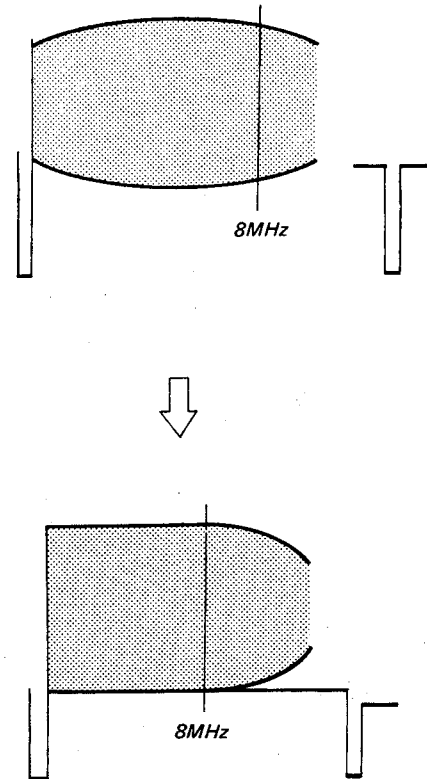
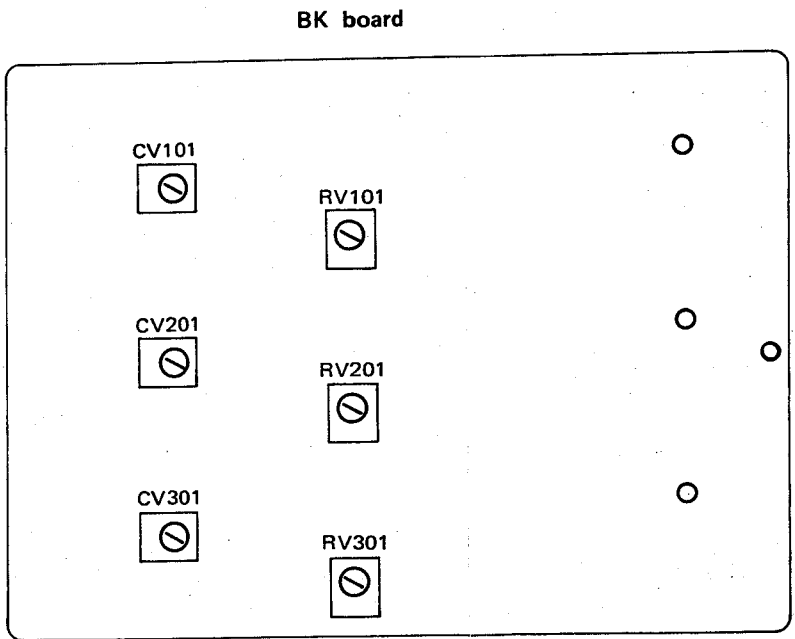
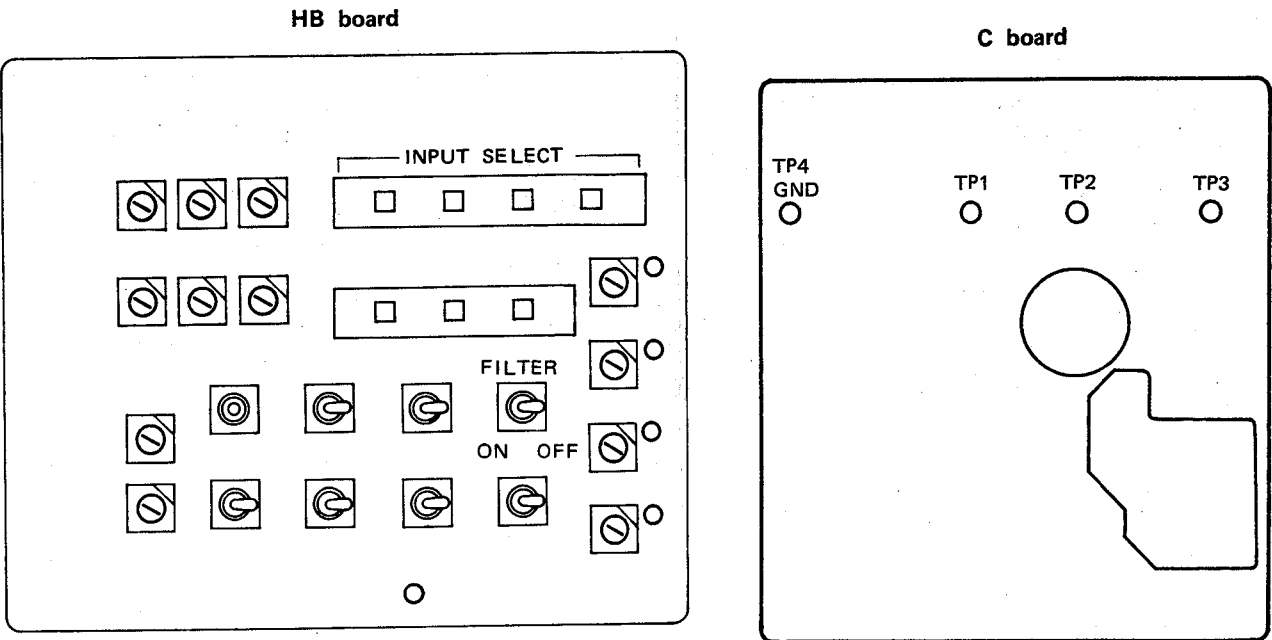
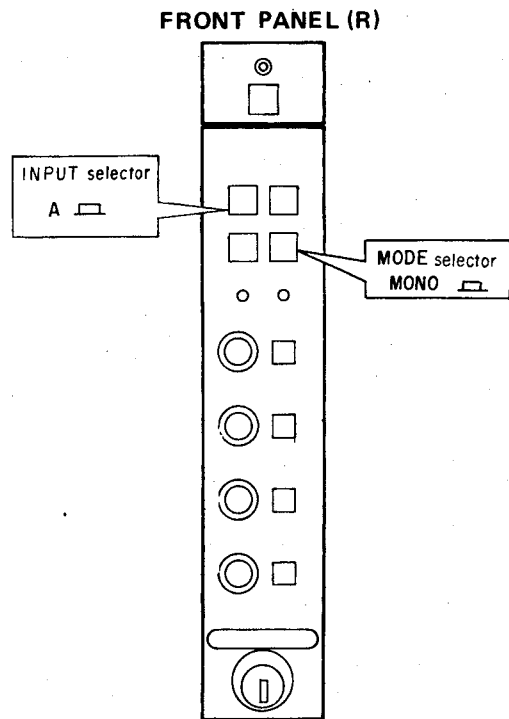
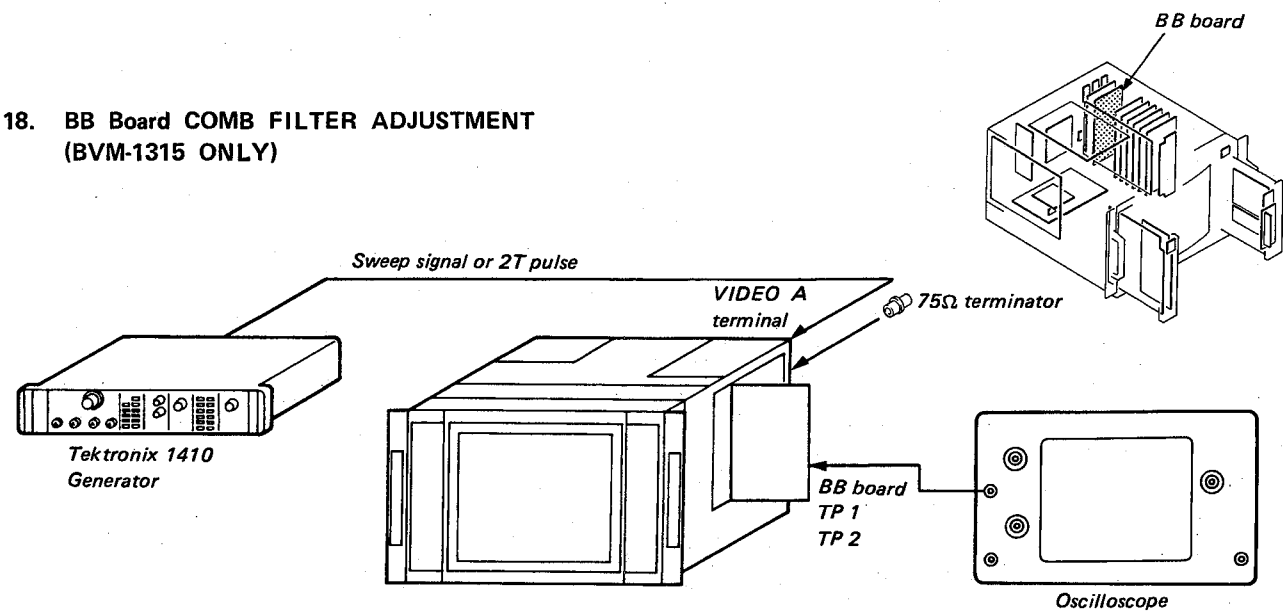


Fig. 17-1



# 18. BB Board COMB FILTER ADJUSTMENT (BVM-1315 ONLY)



## 12.5MHz fo GAIN ADJUSTMENT

1. Input 2T PULSE signal to VIDEO A terminal of the set.  
• COMB/TRAP filter selector  
(FRONT PANEL (L)) ..... COMB ( )
2. Connect an oscilloscope to the TP1 of BB board.
3. Adjust CV101 of BB board so that the output waveform is maximum.
4. Adjust L101 of BB board so that the output waveform is maximum.
5. Adjust to 1.2Vp-p with CV101 of BB board as shown in Fig. 18-1.

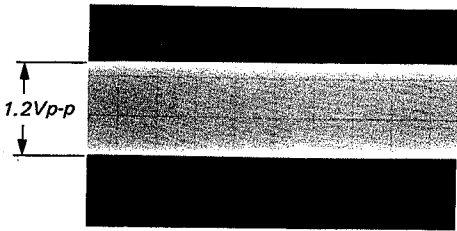


Fig. 18-1

## BPF ADJUSTMENT

1. Input 2T PULSE signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP2 of BB board.
3. Adjust RV1 of BB board so that the output waveform to the same as shown in Fig. 18-2.

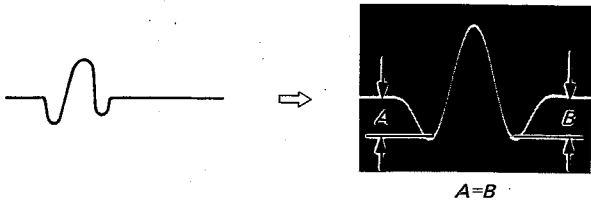


Fig. 18-2

4. Adjust RV2 of BB board so that the output waveform as shown in Fig. 18-3.

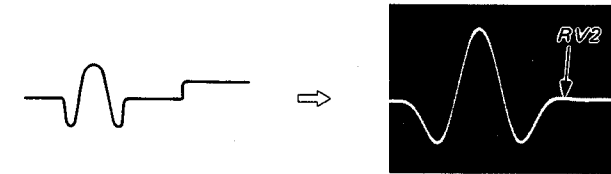
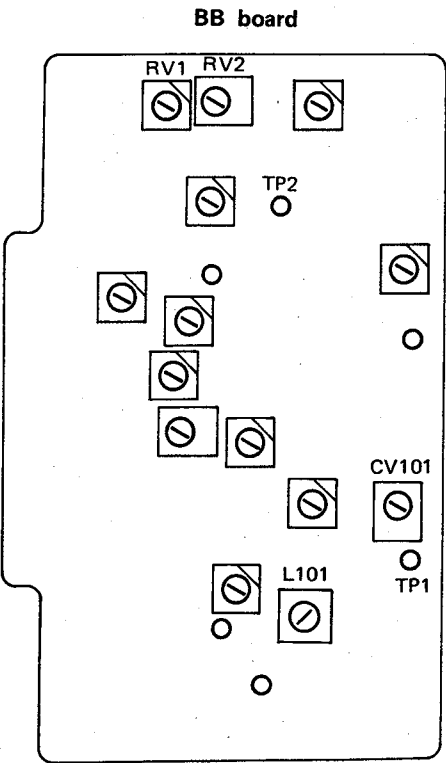


Fig. 18-3



5. Adjust steps 3. and 4. while doing tracking.
6. Input SWEEP (20MHz) signal to the VIDEO A terminal of the set.
7. Adjust CV1 of BB board so that the output waveform as shown in Fig. 18-4.

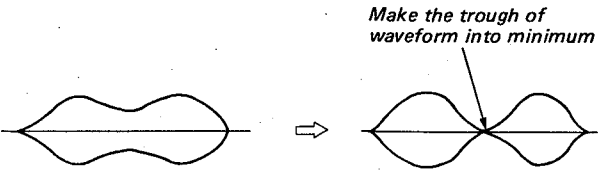
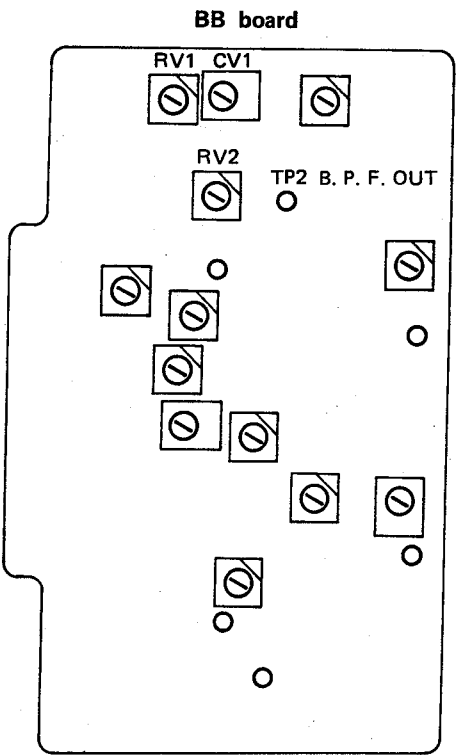
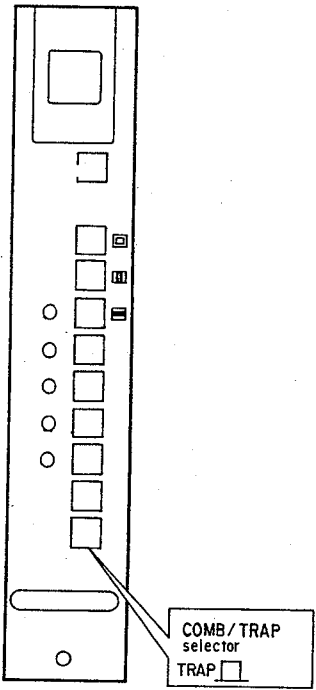


Fig. 18-4

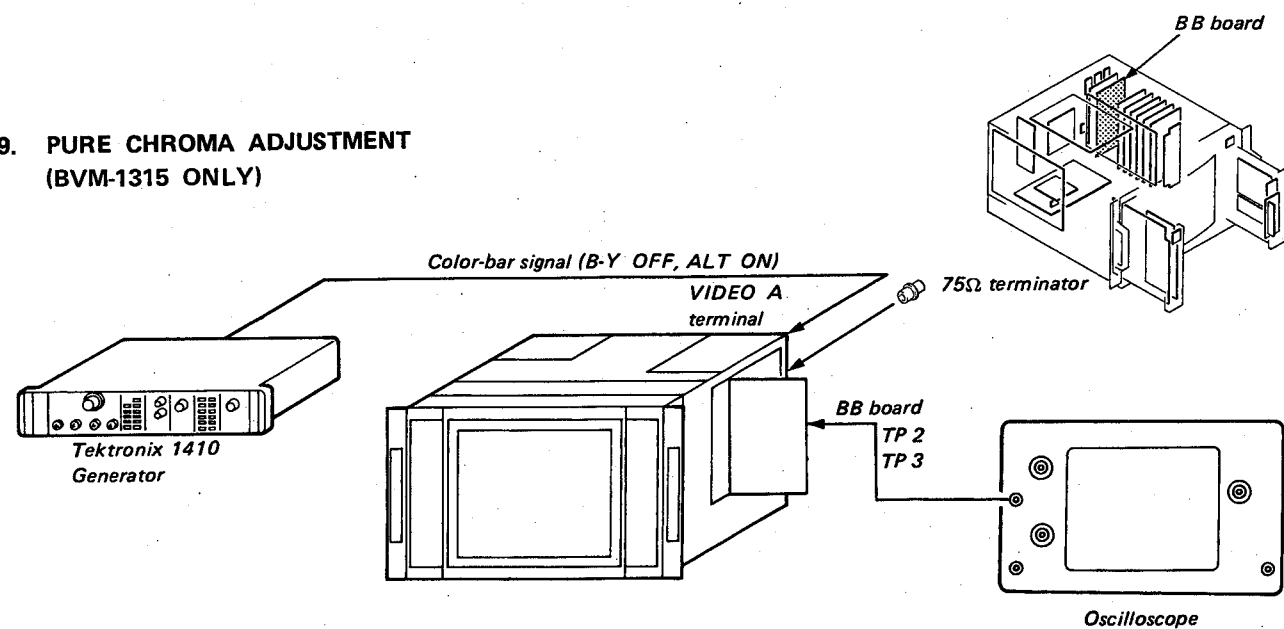
8. Input 2T PULSE signal to VIDEO A terminal of the set, and confirm that waveform 3 and 4 are not distorted.
9. Switch sweep signal and 2T PULSE signal and confirm that the waveforms in steps (3), (4) and (7) are not OFF.



## FRONT PANEL (L)



## 19. PURE CHROMA ADJUSTMENT (BVM-1315 ONLY)



1. Input color-bar signal (B-Y OFF, ALT ON) to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP3 of BB board, the RV101 of BB board at the fully clockwise position.
3. Adjust RV3 and RV4 of BB board so that 3.58MHz component is minimum as shown in Fig.19-1.

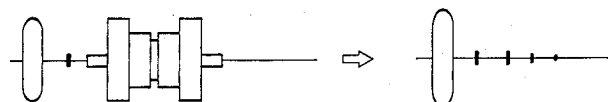


Fig. 19-1

4. Input SWEEP (20MHz) signal to the VIDEO A terminal of the set.
5. Adjust L2 of BB board so that the output waveform as shown Fig. 19-2.

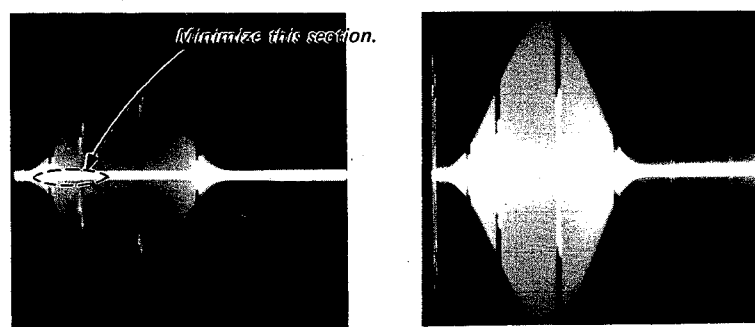
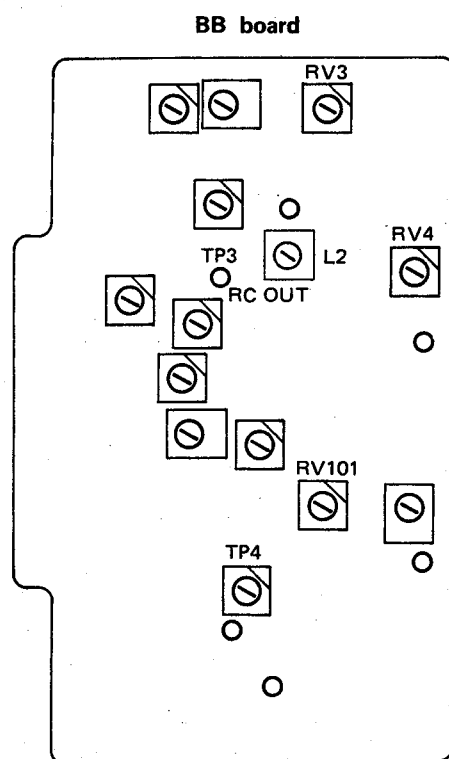


Fig. 19-2

6. Confirm the waveform of item 3.



## 20. PURE Y ADJUSTMENT (BVM-1315 ONLY)

1. Input SWEEP (20MHz) signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP4 of BB board.
3. Set RV9 of BB board at the fully counterclockwise position.
4. Adjust amplitude near to 1Vp-p with RV8.
5. Adjust CV2 of BB board so that the output waveform becomes flat in range of 0 to 10MHz as shown in Fig. 20-1.

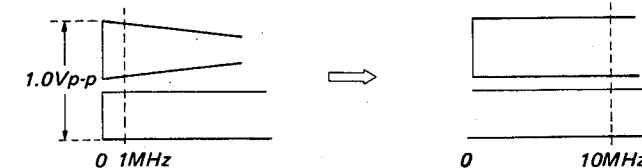


Fig. 20-1

6. Input color-bar signal to the VIDEO A terminal of the set.
7. Adjust RV6 and RV7 of BB board so that 3.58MHz component is minimum as shown in Fig. 20-2.

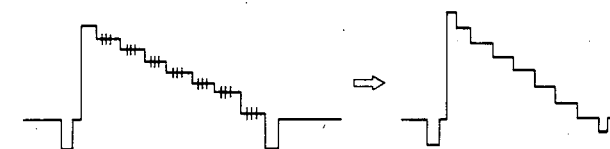


Fig. 20-2

## 21. PURE Y.C GAIN ADJUSTMENT (BVM-1315 ONLY)

1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP301 of BH board.
3. COMB/TRAP filter selector . . . . . TRAP ( )
4. Set the VOLT/DIV of the oscilloscope to variable and adjust the waveform to 8 DIV as shown in Fig. 21-1.

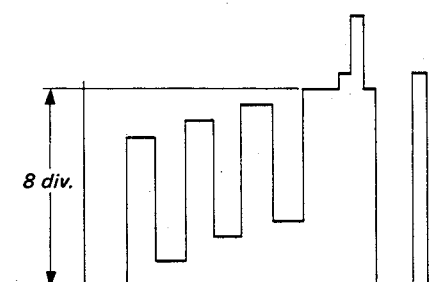


Fig. 21-1

5. COMB/TRAP filter selector . . . . . COMB ( )
6. Adjust RV8 of BB board so that the output waveform is 8 DIV as shown in Fig. 21-1.
7. Adjust RV5 of BB board so that the output waveform becomes flat as shown in Fig. 21-2.

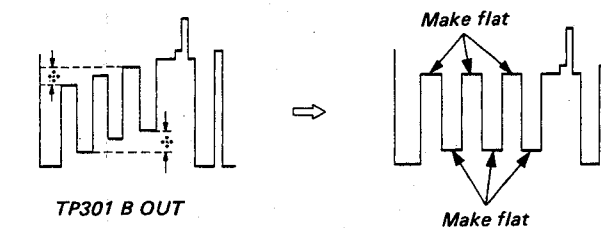
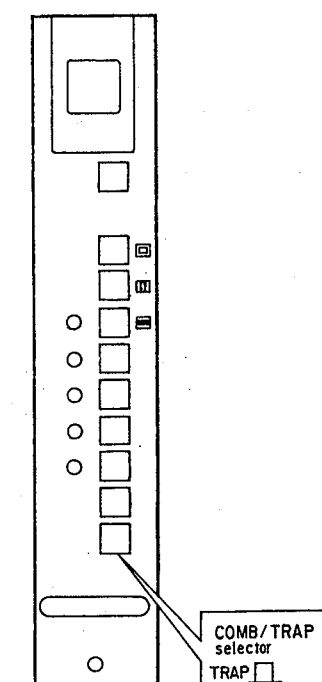


Fig. 21-2

## FRONT PANEL (L)



## 20. PURE Y ADJUSTMENT (BVM-1315 ONLY)

1. Input SWEEP (20MHz) signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP4 of BB board.
3. Set RV9 of BB board at the fully counterclockwise position.
4. Adjust amplitude near to 1Vp-p with RV8.
5. Adjust CV2 of BB board so that the output waveform becomes flat in range of 0 to 10MHz as shown in Fig. 20-1.

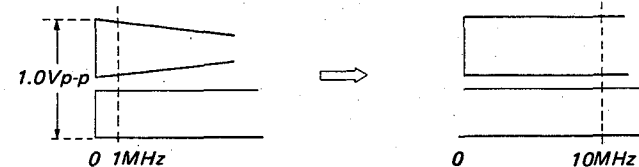


Fig. 20-1

5. COMB/TRAP filter selector . . . . . COMB ( ☒ )
6. Adjust RV8 of BB board so that the output waveform is 8 DIV as shown in Fig. 21-1.
7. Adjust RV5 of BB board so that the output waveform becomes flat as shown in Fig. 21-2.

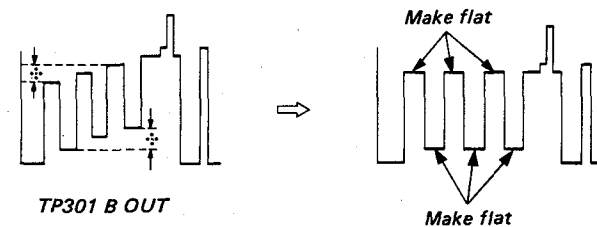


Fig. 21-2

6. Input color-bar signal to the VIDEO A terminal of the set.
7. Adjust RV6 and RV7 of BB board so that 3.58MHz component is minimum as shown in Fig. 20-2.

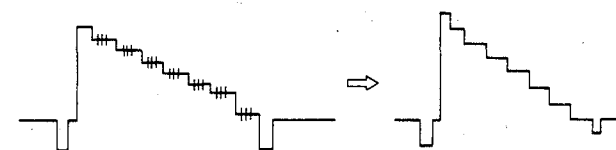
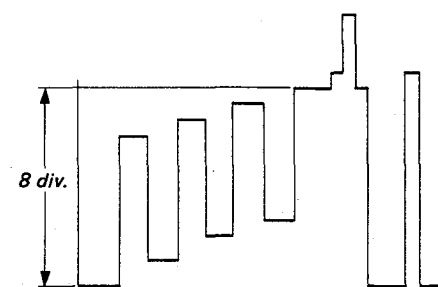


Fig. 20-2

## 21. PURE Y.C GAIN ADJUSTMENT (BVM-1315 ONLY)

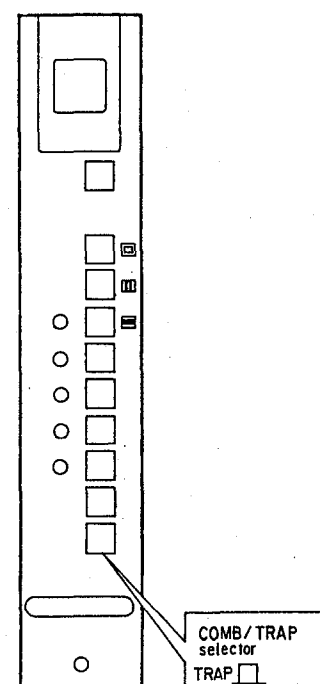
1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP301 of BH board.
3. COMB/TRAP filter selector . . . . . TRAP ( ☐ )
4. Set the VOLT/DIV of the oscilloscope to variable and adjust the waveform to 8 DIV as shown in Fig. 21-1.



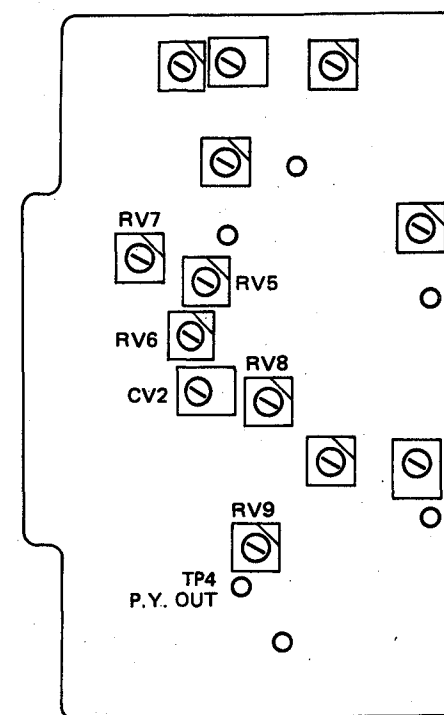
TP301 B OUT

Fig. 21-1

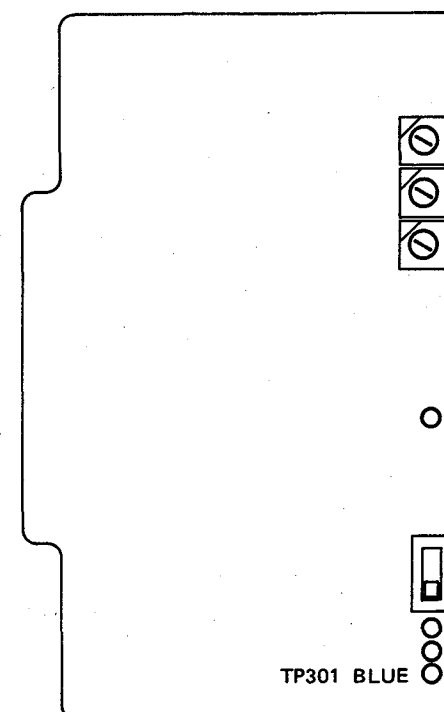
## FRONT PANEL (L)



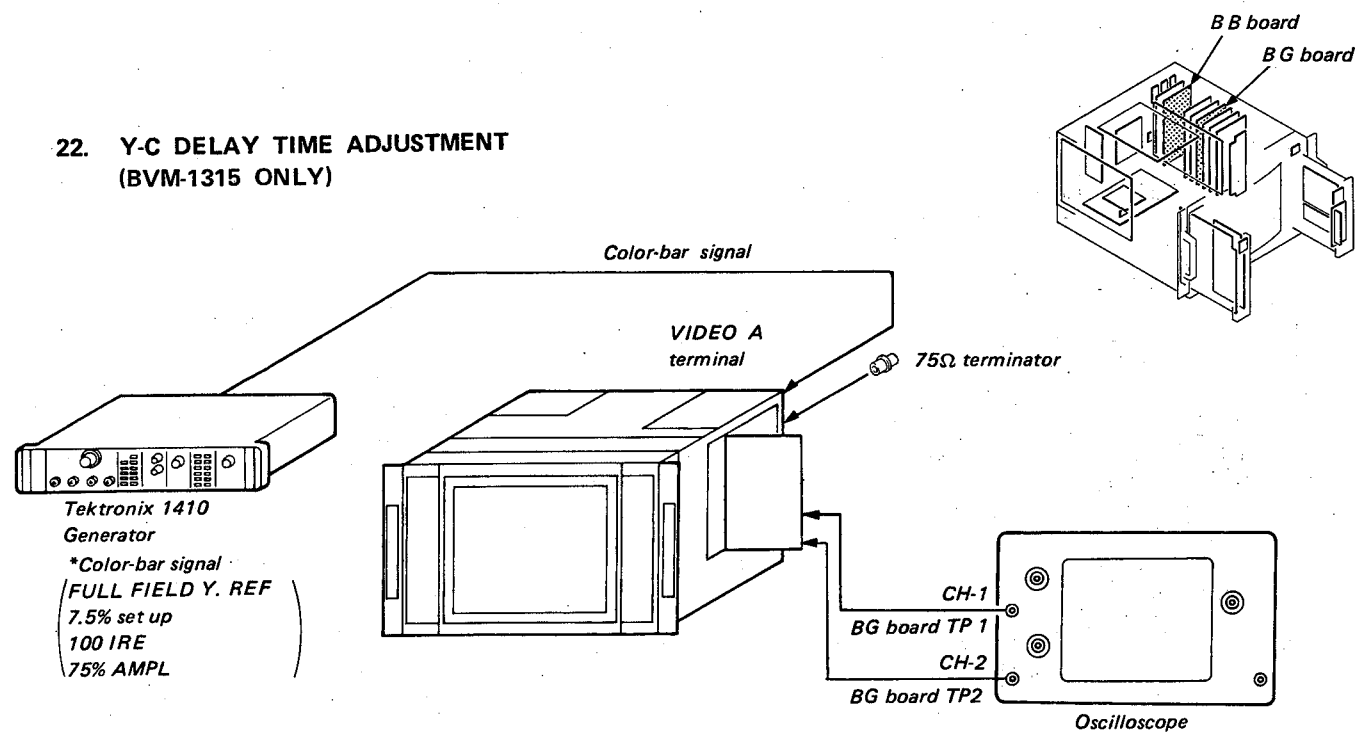
## BB board



## BH board



22. Y-C DELAY TIME ADJUSTMENT  
(BVM-1315 ONLY)



1. Input color-bar signal (FULL FIELD/Y REF) to the VIDEO A terminal of the set.
2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP2 of BG board (VERT mode of the oscilloscope is CHOP).
3. Adjust RV9 of BB board so that the output waveform as shown in Fig. 22-1.

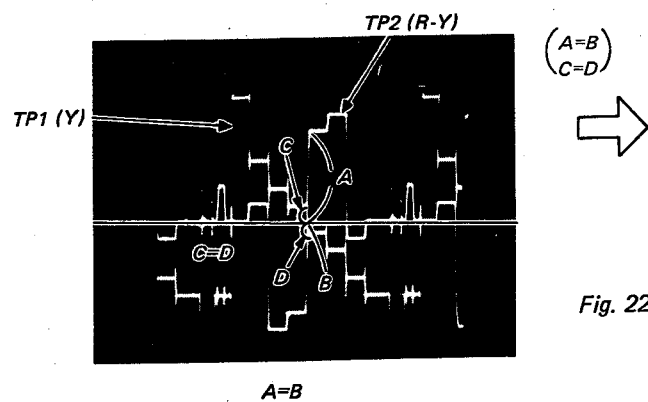
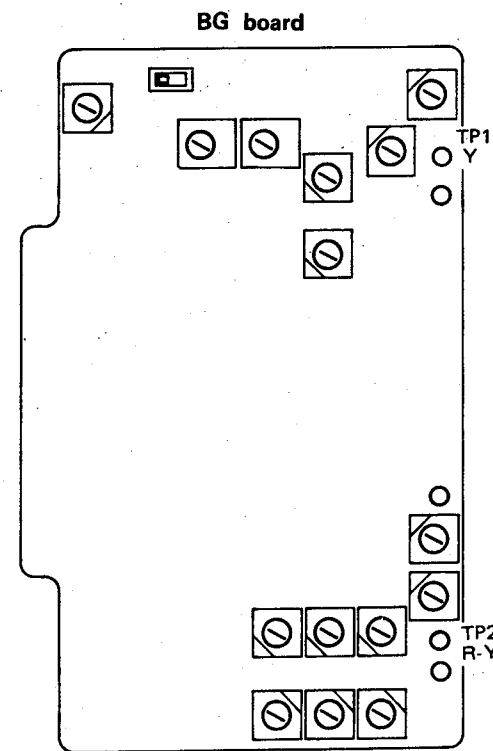
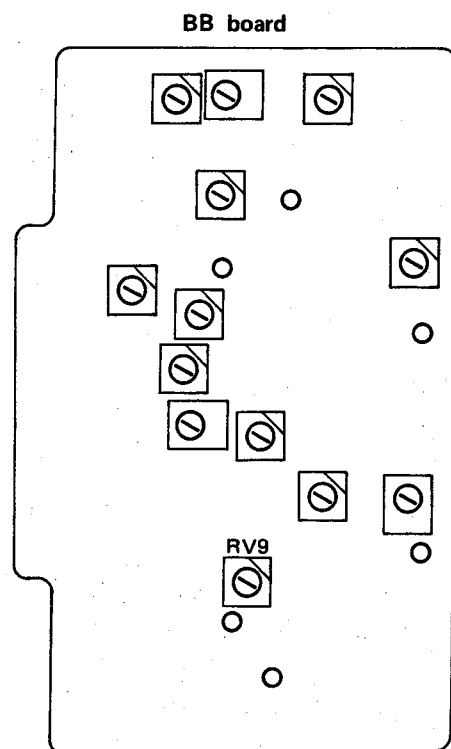
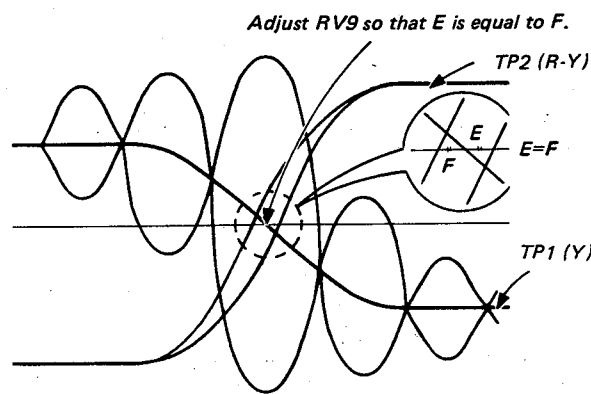
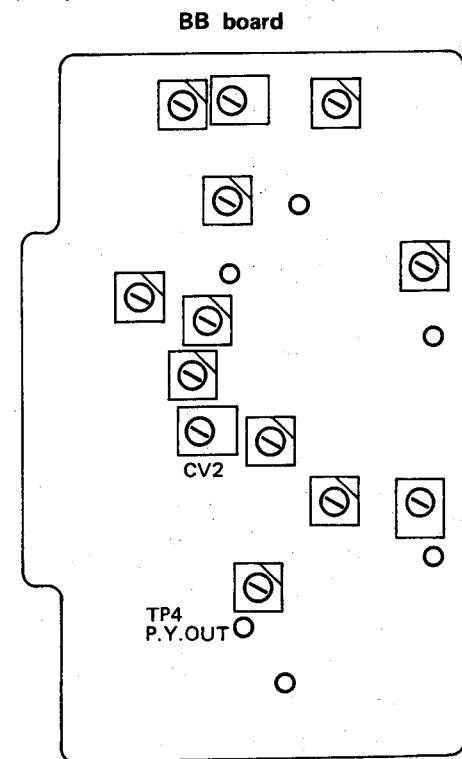


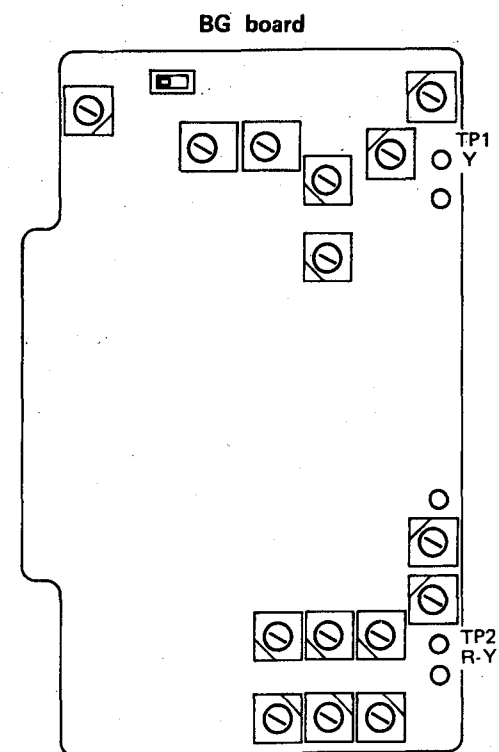
Fig. 22-1



FREQUENCY CHARACTERISTIC CONFIRMATION

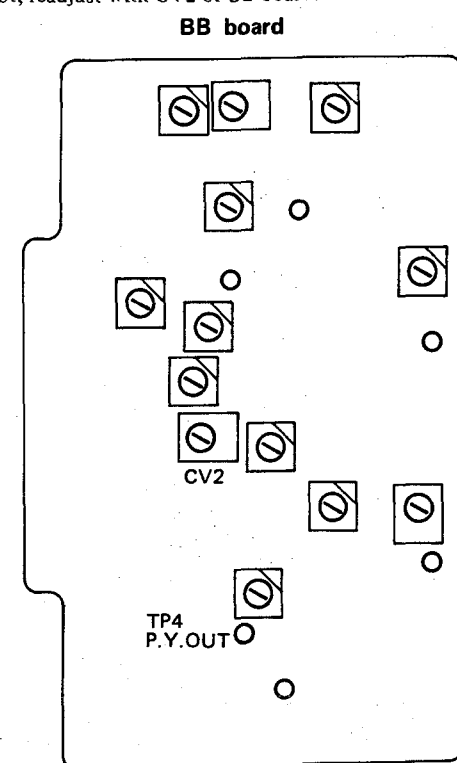
1. Input SWEEP signal (20MHz) to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Confirm the output waveform becomes flat in a range of 0 to 10MHz.
4. If not, readjust with CV2 of BB board.



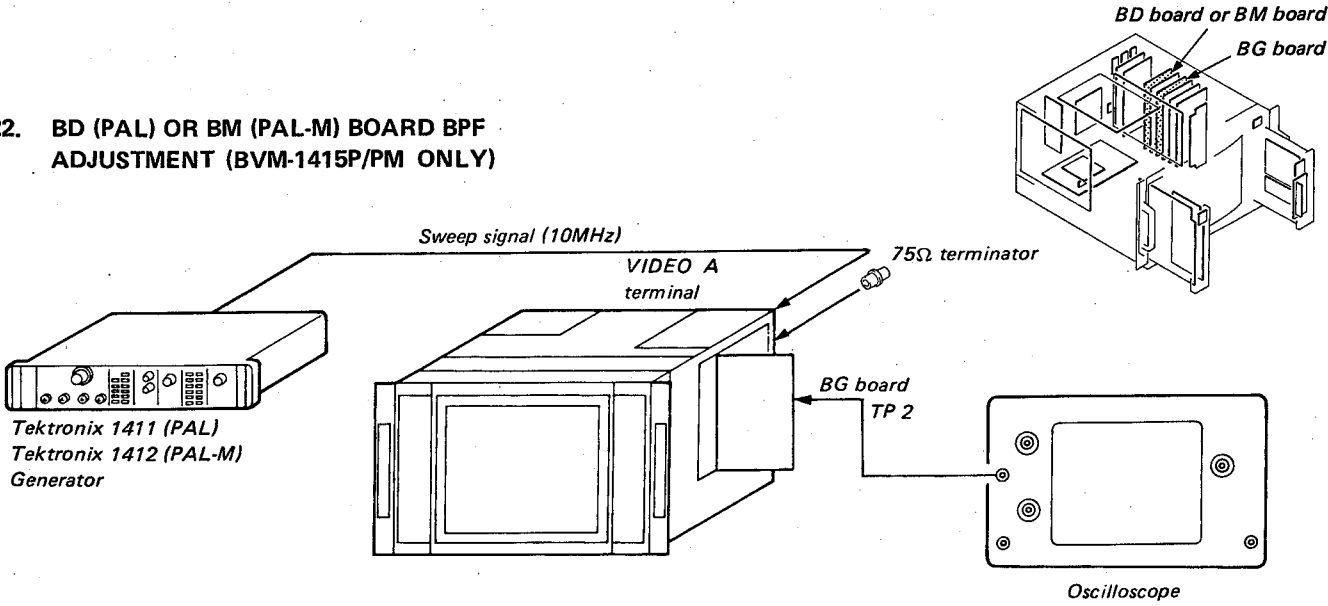


**FREQUENCY CHARACTERISTIC CONFIRMATION**

1. Input SWEEP signal (20MHz) to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Confirm the output waveform becomes flat in a range of 0 to 10MHz.
4. If not, readjust with CV2 of BB board.



22. BD (PAL) OR BM (PAL-M) BOARD BPF  
ADJUSTMENT (BVM-1415P/PM ONLY)



- \* Set the PAL switch of the BVM-1410P or 1410PM to the S position.
1. Input SWEEP signal (10MHz) to the VIDEO A terminal of the set.
  2. Connect an oscilloscope to the TP2 on the BG board.
  3. Make the V/div of oscilloscope into VARIABLE, and match the upper section of waveform to 7 div as shown in Fig. 22-1.

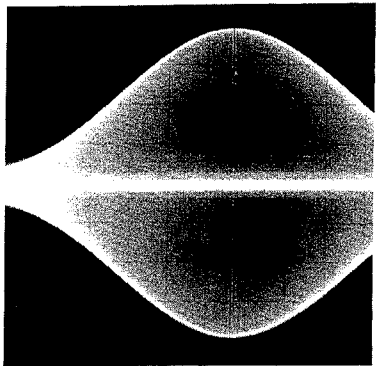
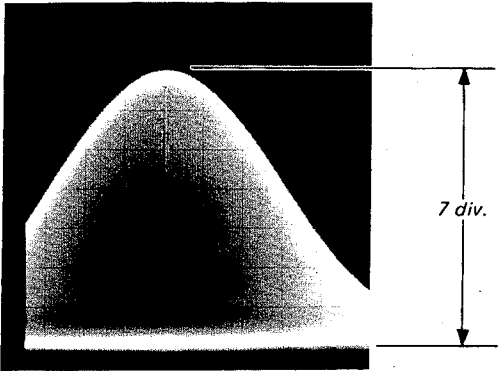


Fig. 22-1



4. Adjust L3 on the BD board so that A is equal to B as shown in Fig. 22-2.

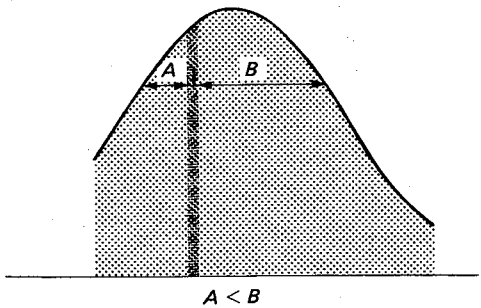
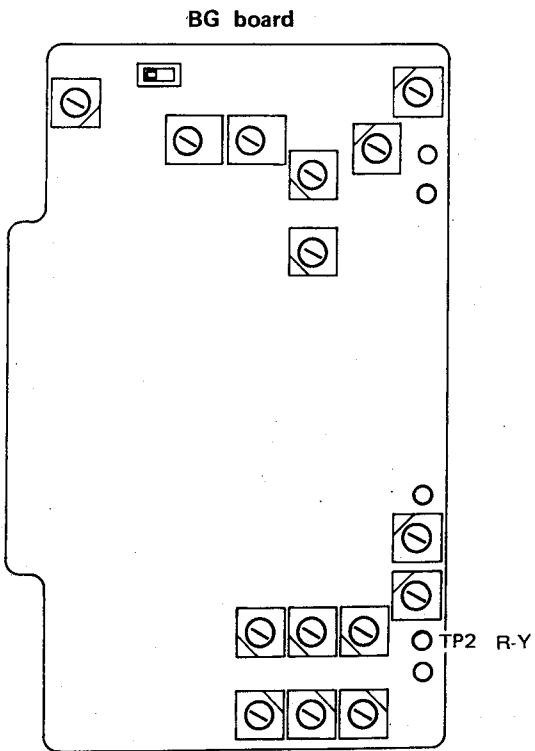
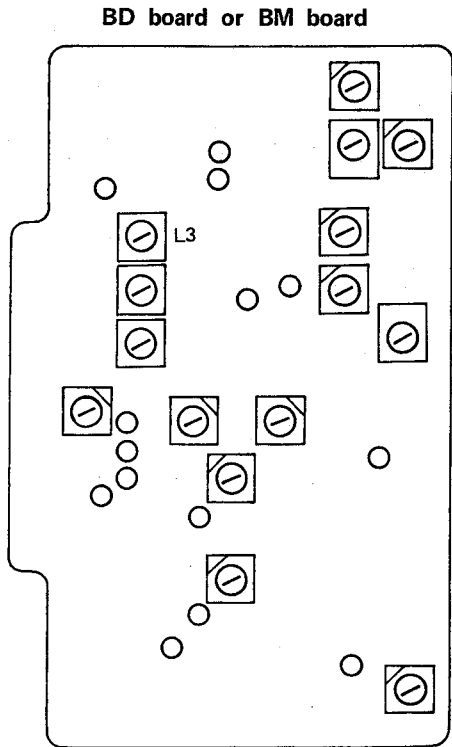
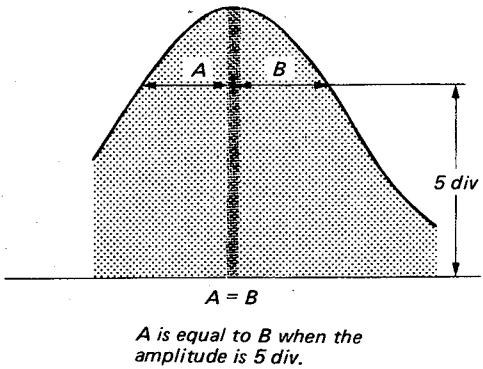


Fig. 22-2





# 23. BD (PAL) OR BM (PAL-M) BOARD PHASE SHIFT ADJUSTMENT (BVM-1415P/PM ONLY)

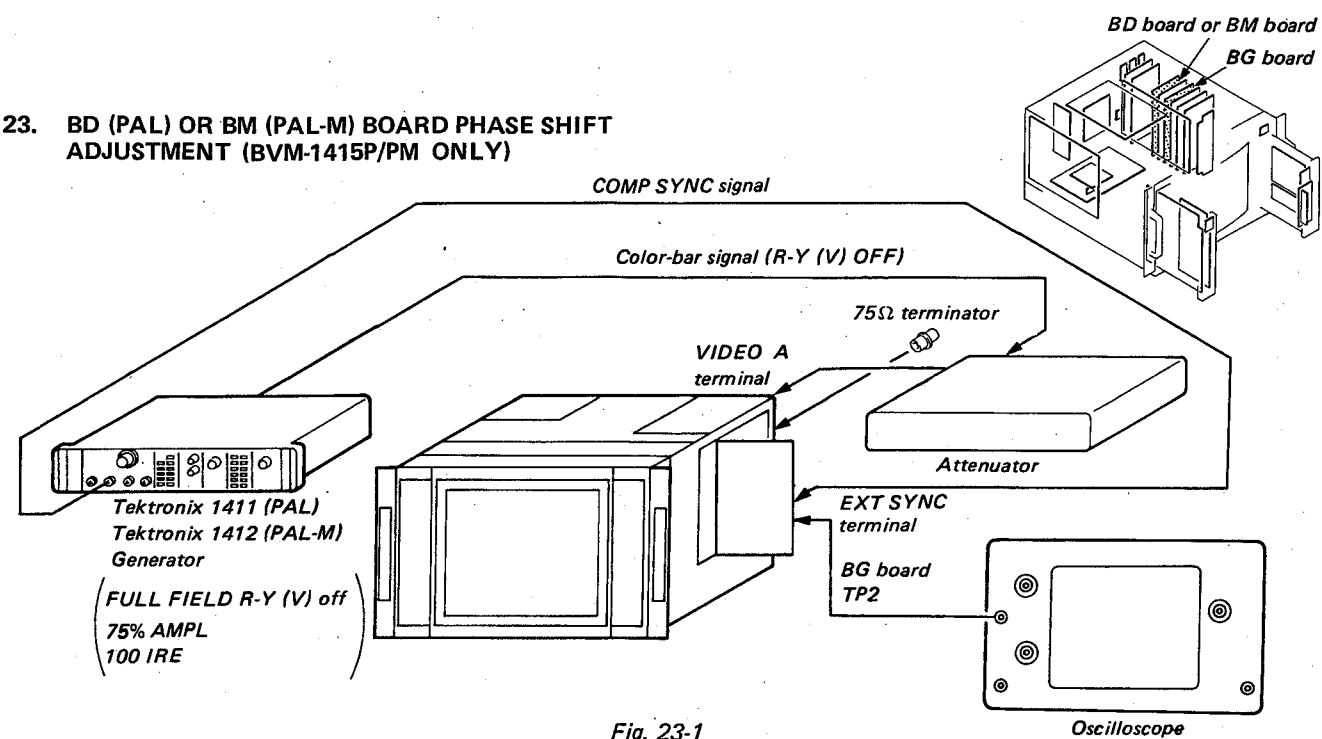


Fig. 23-1

\* Set the PAL switch of the BVM-1410P or 1410PM to the S position and RV2, CV1, CV2 on the BD or BM board to mechanical midposition.

1. Complete the connection as shown in Fig. 23-1.
  - INPUT selector (FRONT PANEL (R)) ... A ( ☐ )
  - SYNC selector (FRONT PANEL (R)) ... EXT ( ☐ )
2. Connect an oscilloscope to the TP2 on the BG board.
3. Make the waveform flat with the PHASE control of front panel (R) as shown in Fig. 23-2.

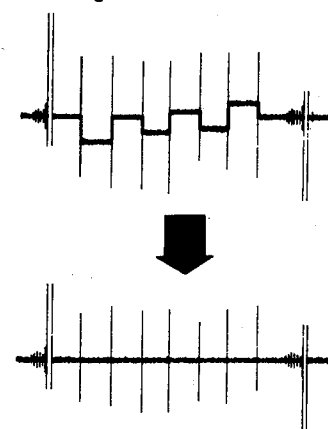
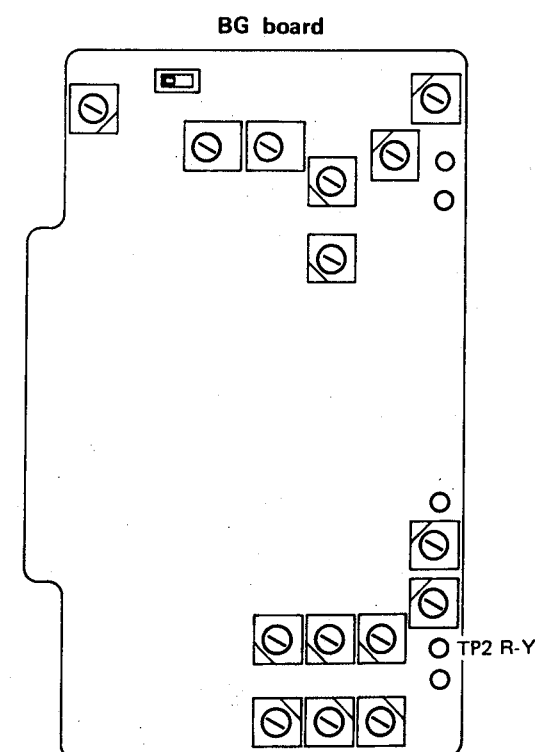
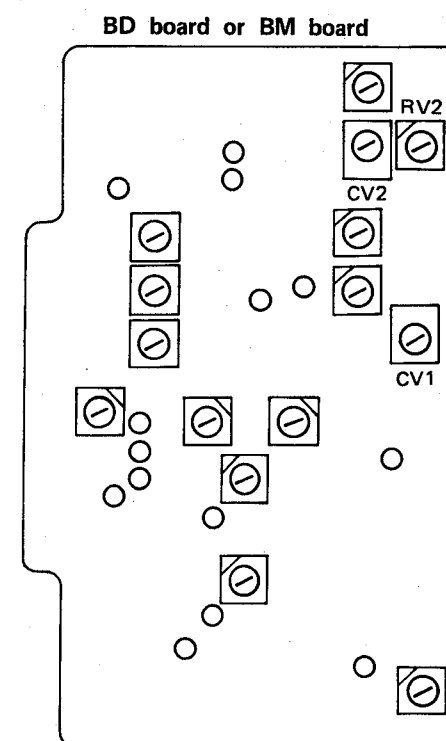
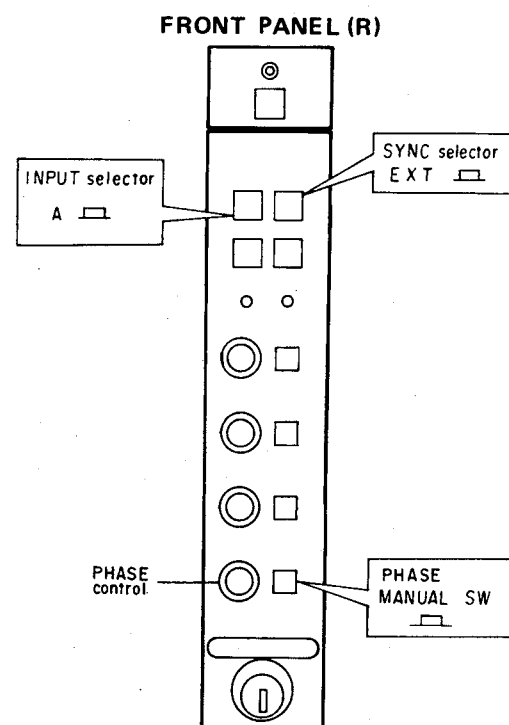
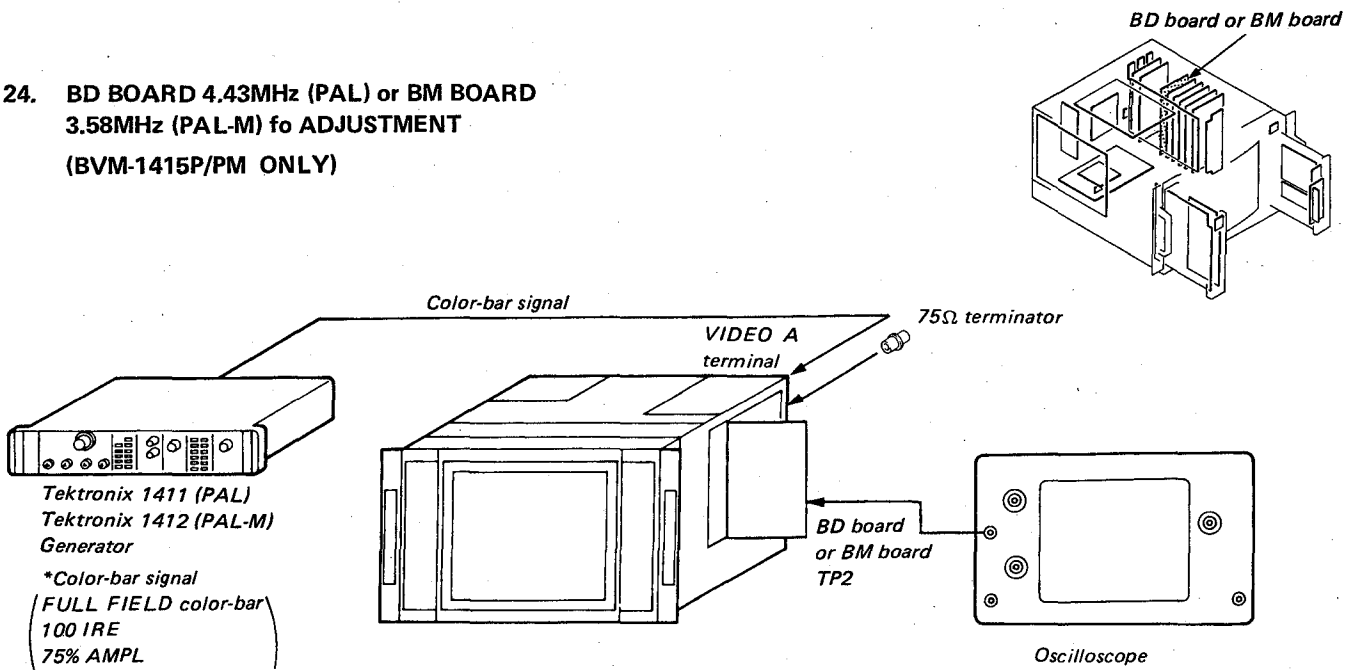


Fig. 23-2

4. Attenuate the signal by 10dB by using attenuator.
5. Adjust RV2 on the BD or BM board so that the output waveform becomes flat as shown in Fig. 23-2.
6. Restore the attenuator to 0dB.
7. Repeat the steps 3 to 5.



24. BD BOARD 4.43MHz (PAL) or BM BOARD  
3.58MHz (PAL-M) fo ADJUSTMENT  
(BVM-1415P/PM ONLY)



1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP2 of BD or BM board.
3. Short-circuit between TP11, 12 of BD or BM board with a jumper wire.
4. Adjust CV2 of BD or BM board so that the output waveform is shifted slowly as shown in Fig. 24-1.
5. Turn off the power of this monitor, and disconnect TP11, 12 of BD or BM board.

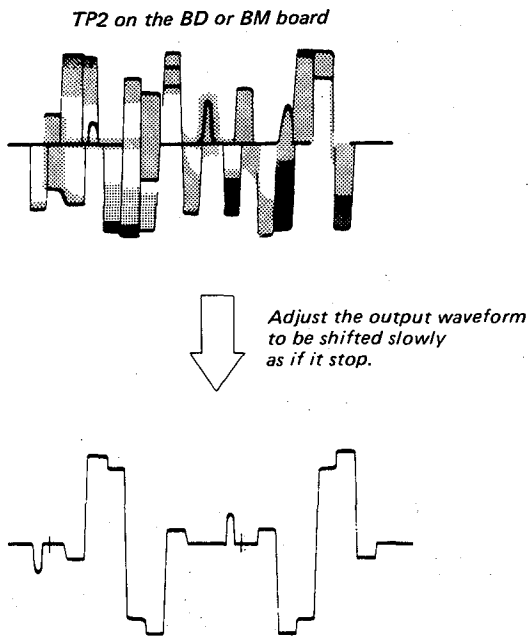
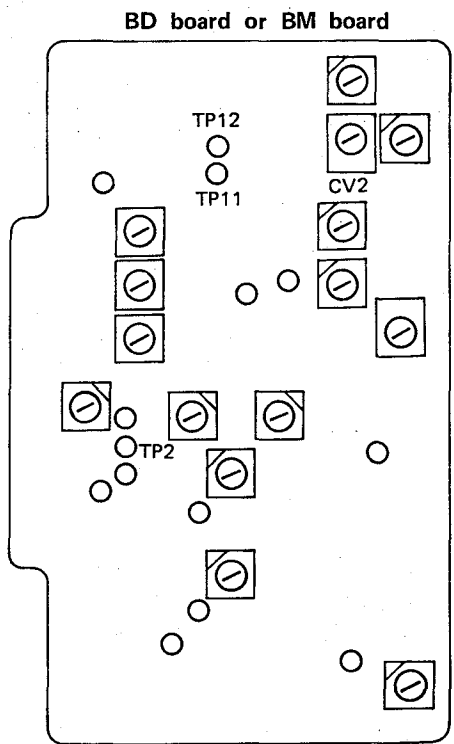
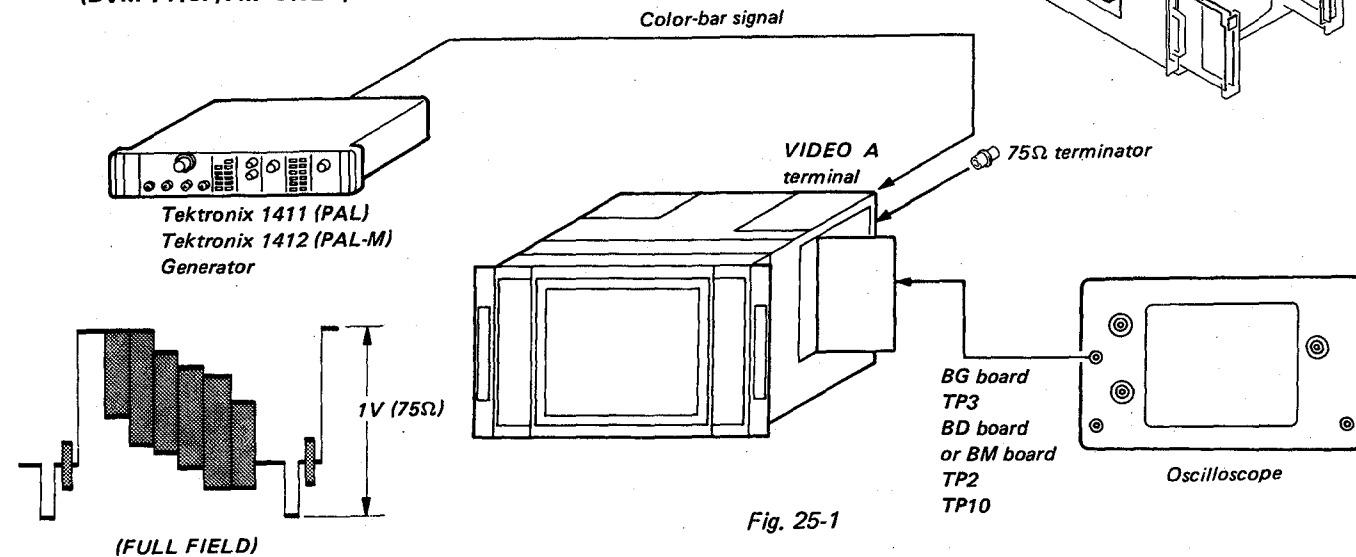


Fig. 24-1



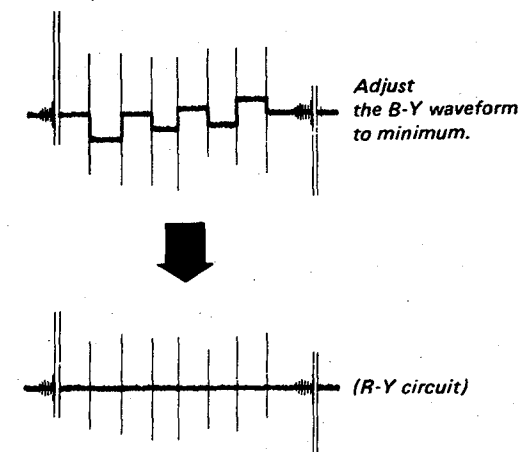
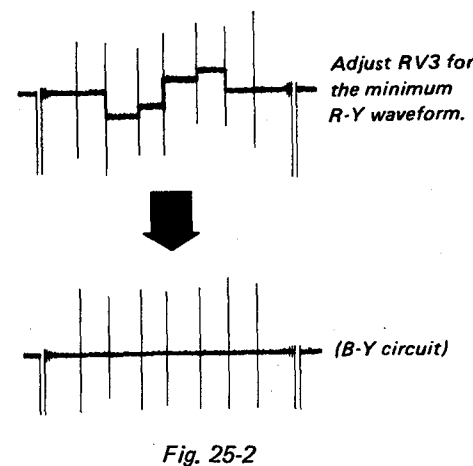
25. BD BOARD (PAL) or BM BOARD (PAL-M)  
COLOR DIFFERENCE PHASE ADJUSTMENT  
(BVM-1415P/PM ONLY)



1. Complete the connections as shown in Fig. 25-1.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, the SYNC switch to the INT position, and the PAL switch to the S position.

**B-Y System Adjustment**

3. Connect the oscilloscope probe to TP3 on the BG board, and turn off the U (B-Y) signal of the signal generator.
4. Set the oscilloscope sensitivity to 20mV/DIV, and adjust RV8 on the BD or BM board so that the output waveform is flat. (See Fig. 25-2.)

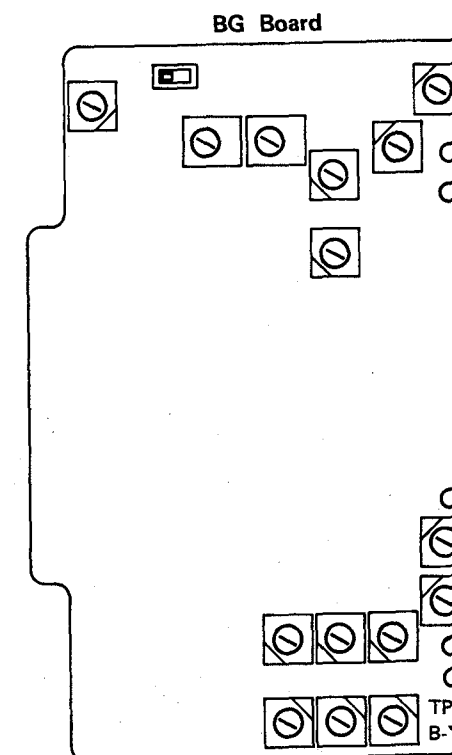
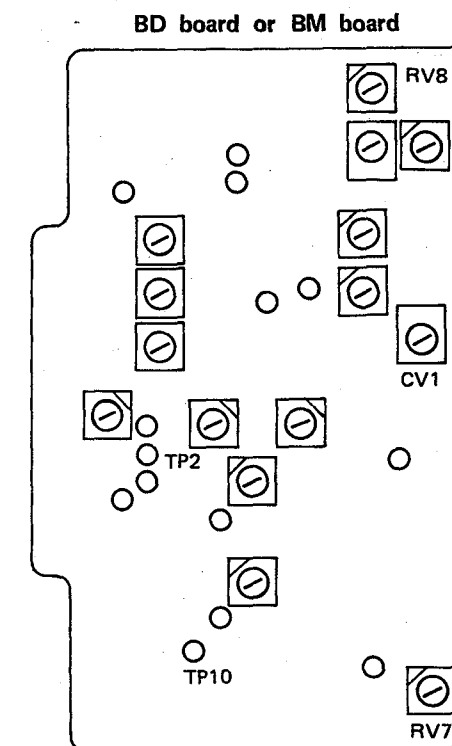


**Quad Adjustment**

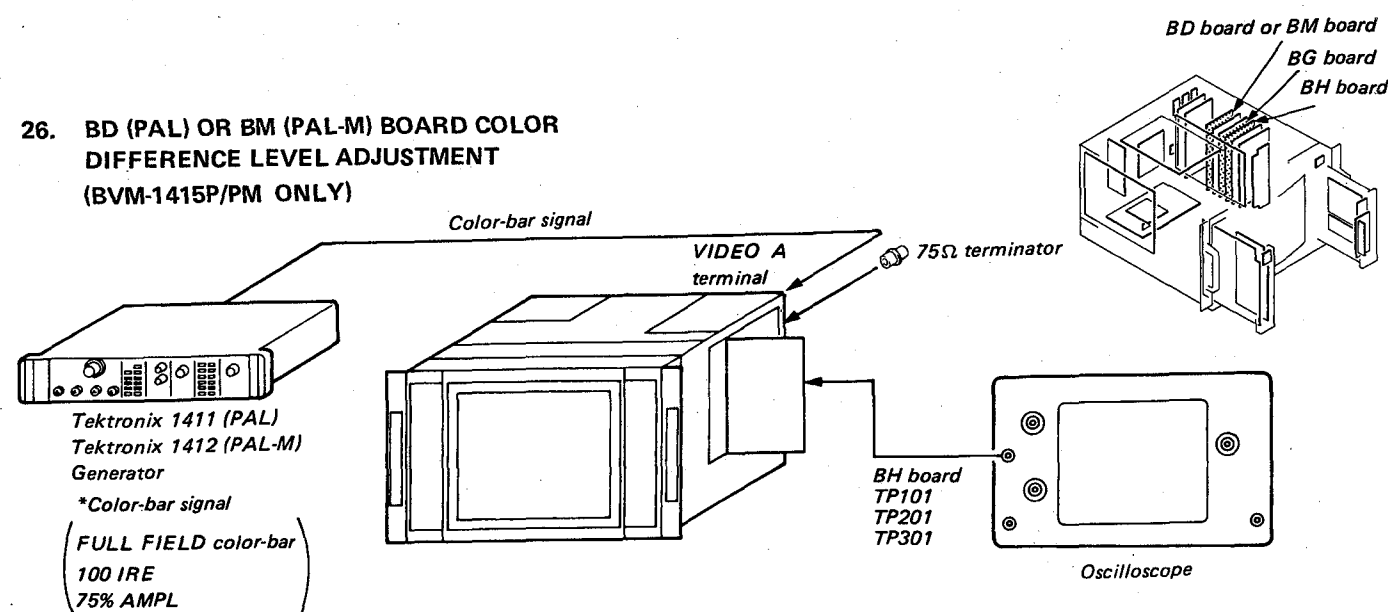
5. Connect the oscilloscope probe to TP2 on the BD or BM board. Turn on the U signal of the signal generator, and turn off the V (R-Y) signal. Then adjust CV1 on the BD or BM board so that the output waveform is flat. (See Fig. 25-3.)
6. Repeat the steps 3 to 6.

**PAL-D Phase Adjustment**

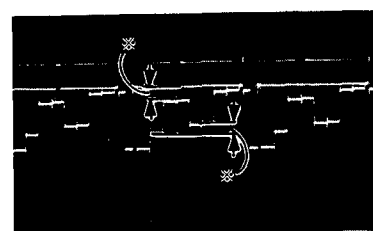
7. Set the PAL switch to the D position and turn on the V signal of the signal generator, and turn off U signal.
8. Connect the oscilloscope probe to TP10 on the BD or BM board.
9. Adjust RV7 on the BD board so that the output waveform is flat. (See Fig. 25-2.)
10. Finally, perform the adjustments of 3 and 4 by directly mounting the BD or BM board to the set, without using the extension board.



## 26. BD (PAL) OR BM (PAL-M) BOARD COLOR DIFFERENCE LEVEL ADJUSTMENT (BVM-1415P/PM ONLY)



- \* Set the PAL switch of the BVM-1410P or 1410PM to the S position.
- 1. Input color-bar signal to the VIDEO A terminal of the set.
- 2. Connect an oscilloscope to the TP101 of BH board.
- 3. Adjust RV3 of BD or BM board so that the level with \* is flat as shown in Fig. 26-1.

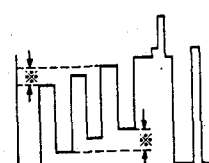


TP101 R OUT

Fig. 26-1

\* Adjust the levels with \* to be flat respectively using RV3 of BD or BM board.

- 4. Connect an oscilloscope to the TP301 of BH board.
- 5. Adjust RV4 of BD or BM board so that the output waveform as shown in Fig. 26-2.



TP103 B OUT

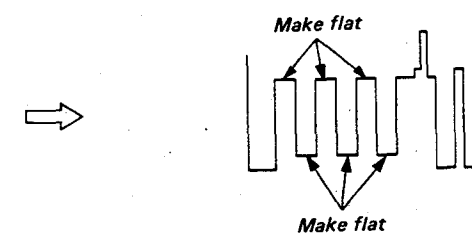
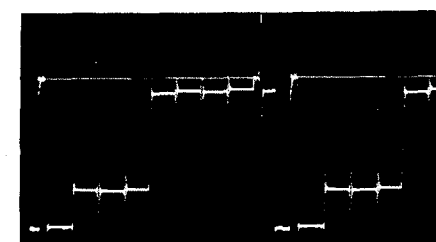


Fig. 26-2

- 6. Connect an oscilloscope to the TP201 of BH board.
- 7. Adjust RV4 and RV5 of BG board so that the INPUT waveform becomes flat as shown in Fig. 26-3.



TP201 G OUT

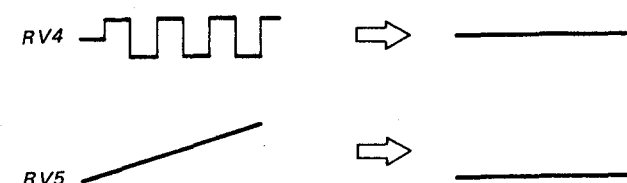
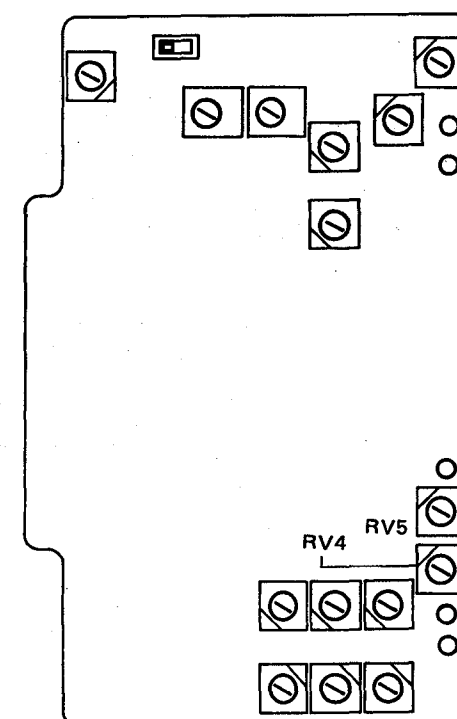
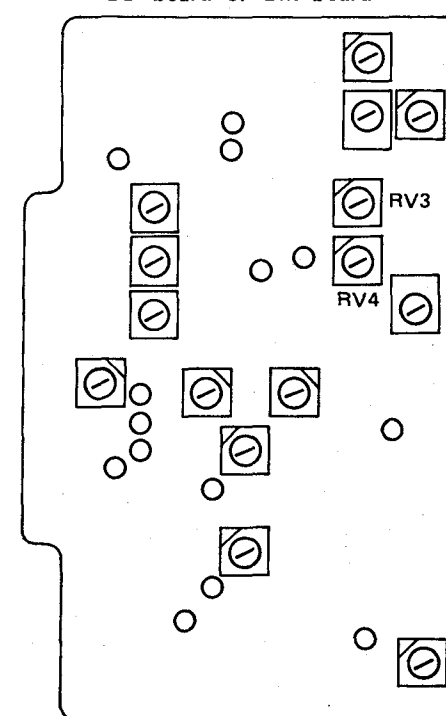


Fig. 26-3

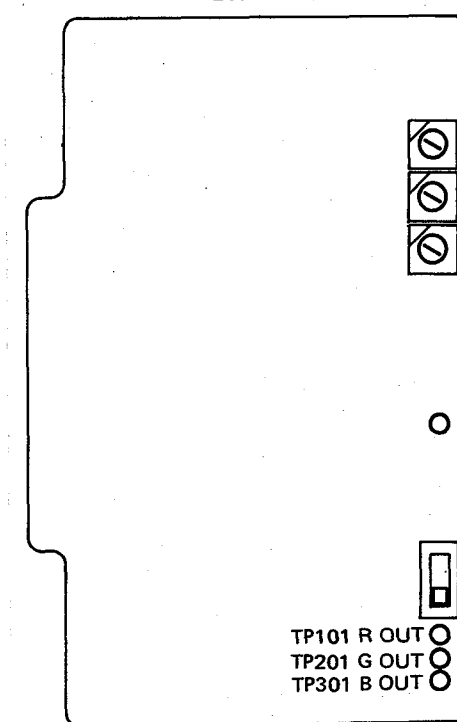
BG board



BD board or BM board



BH Board



27. BD BOARD (PAL) OR BM BOARD (PAL-M)  
PAL-D GAIN AND CCD BIAS ADJUSTMENT

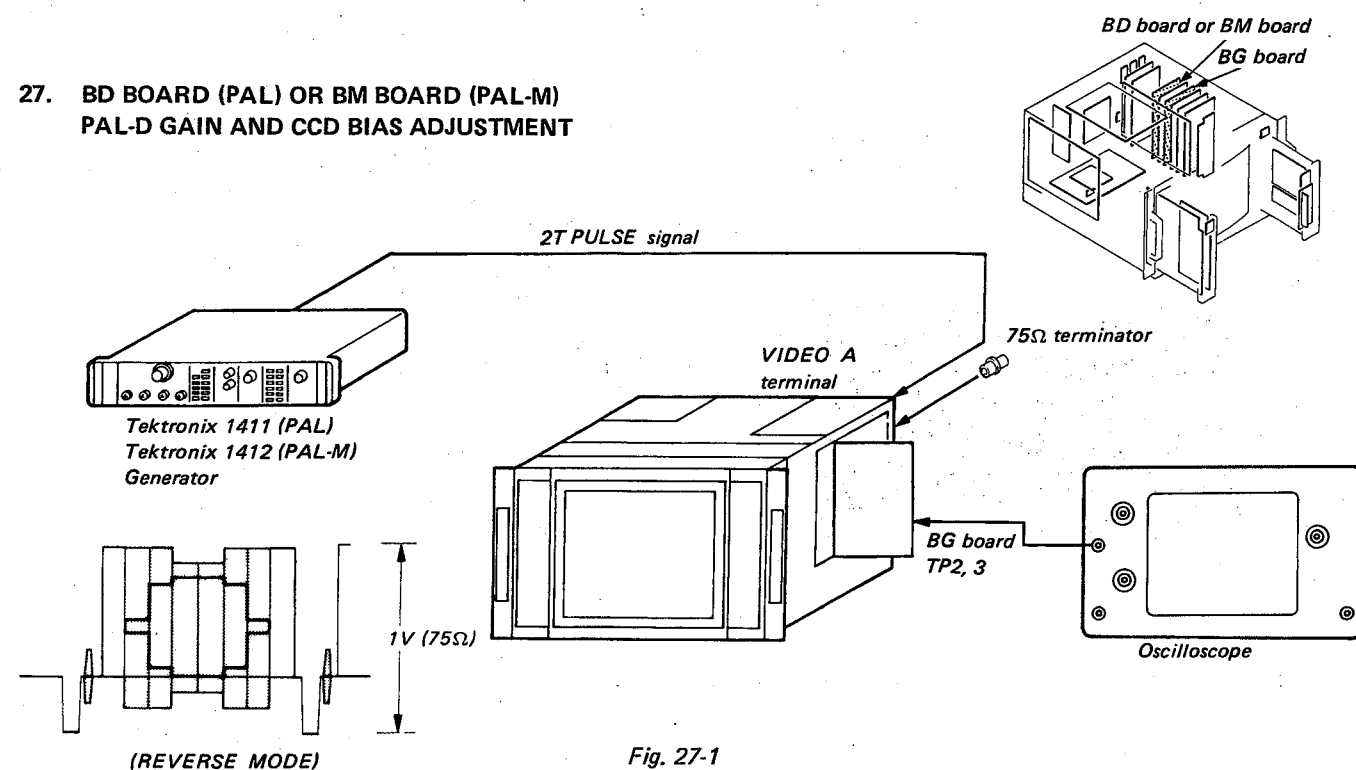
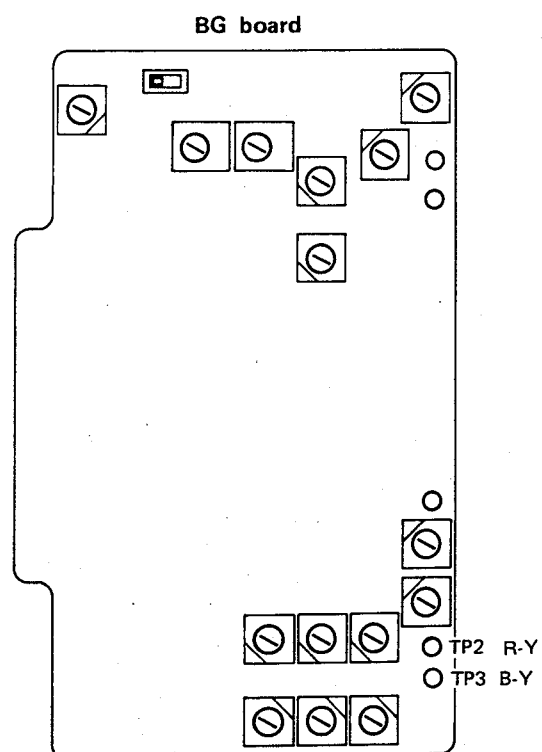
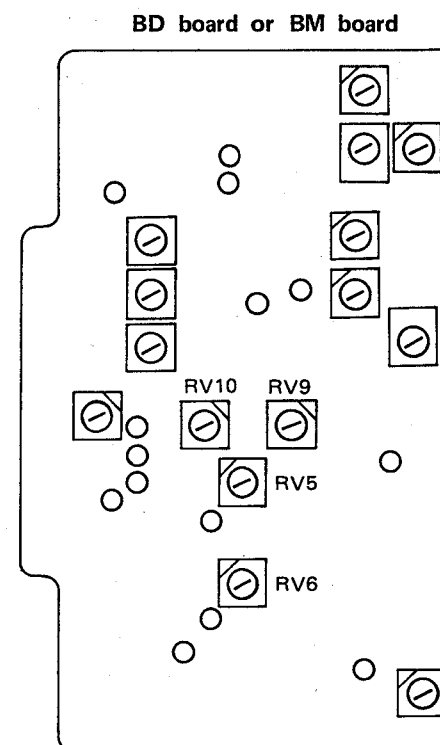
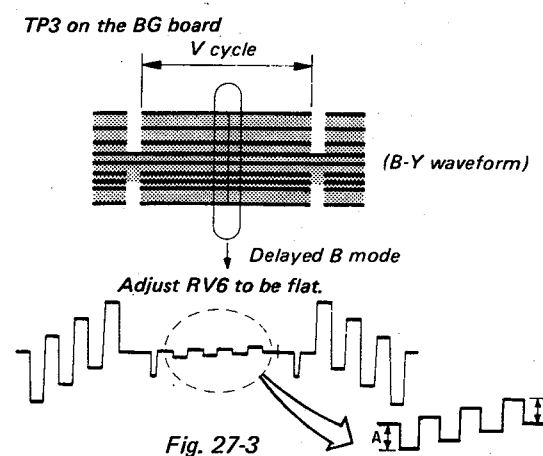
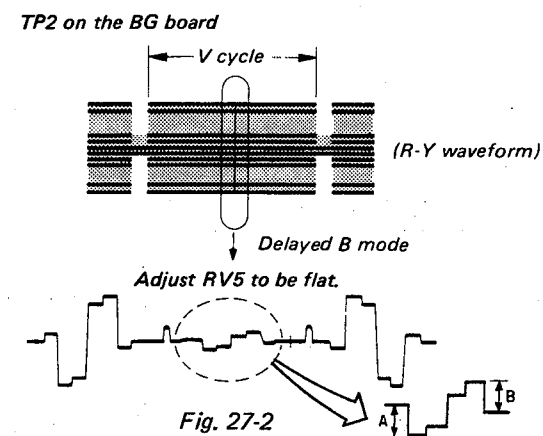
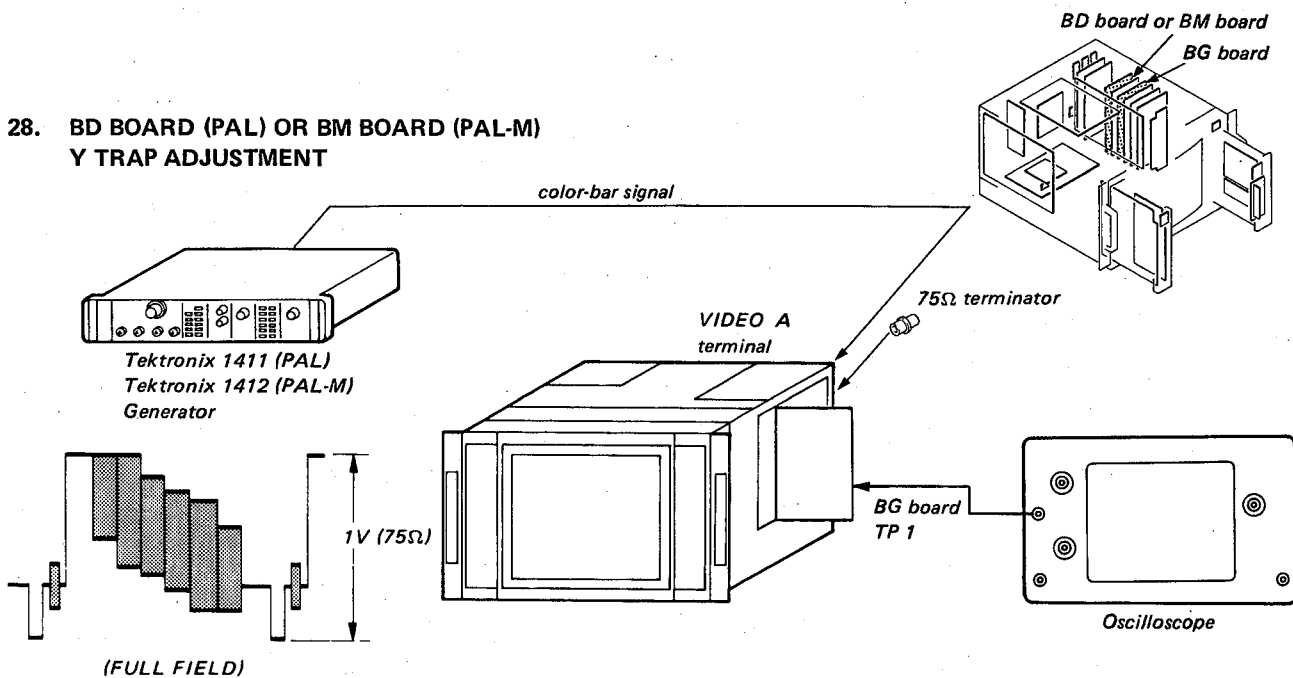


Fig. 27-1

- \* Set the PAL switch of BVM-1410P or 1410PM to the D position.
1. Complete the connections as shown in Fig. 27-1. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
  2. Connect the oscilloscope probe to TP2 on the BG board.
  3. Turn RV5 and RV6 on the BD or BM board fully clockwise.
  4. By observing the waveform shown in Fig. 27-2, adjust RV9 on the BD or BM board so that it becomes A = B.
  5. Adjust RV5 on the BD or BM board so that the waveform shown in Fig. 27-2 becomes flat.
  6. Connect the probe of the oscilloscope to TP3 on the BG board and observe the section shown in Fig. 27-3.
  7. Adjust RV10 on the BD or BM board so that the waveform of the oscilloscope becomes A = B.
  8. Adjust RV6 on the BD or BM board so that the waveform shown in Fig. 27-3 becomes flat.



## 28. BD BOARD (PAL) OR BM BOARD (PAL-M) Y TRAP ADJUSTMENT



1. Input color-bar signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L1 of BD or BM board so that 4.43 MHz (PAL) or 3.58 MHz (PAL-M) subcarrier is minimum as shown in Fig. 28-1.

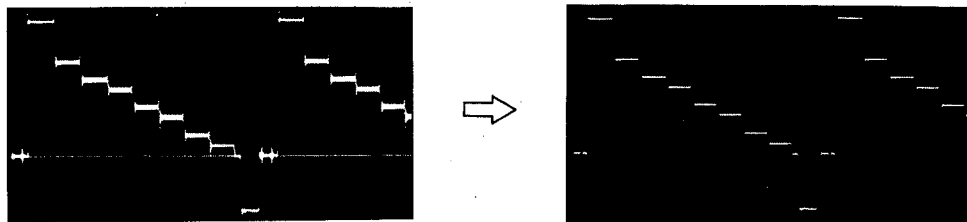
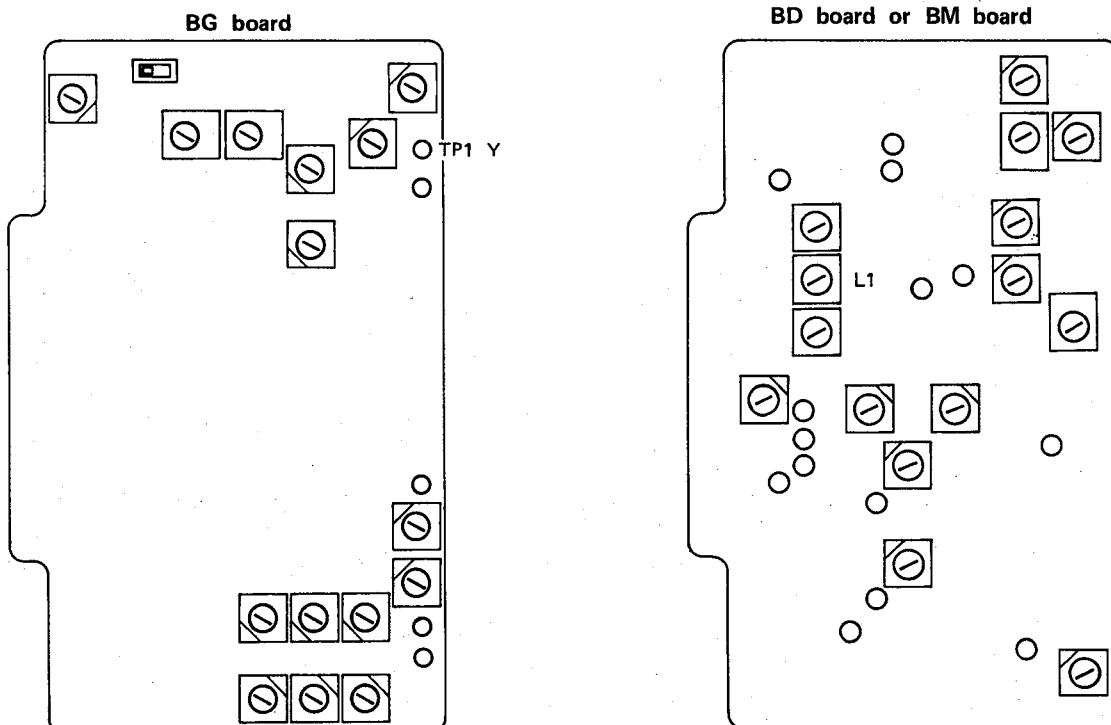
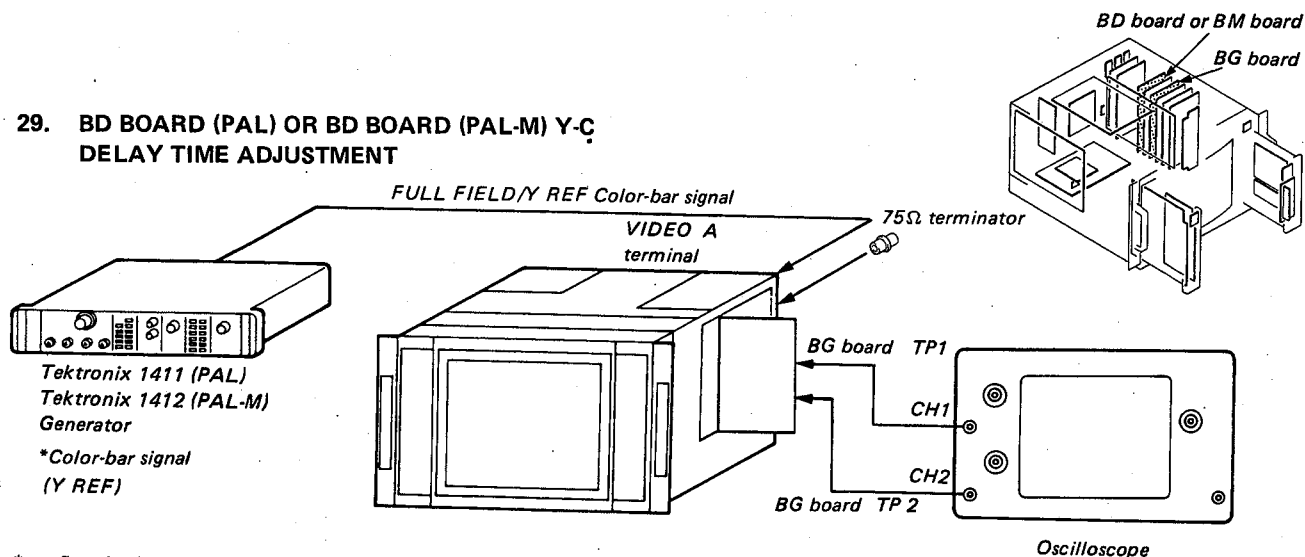


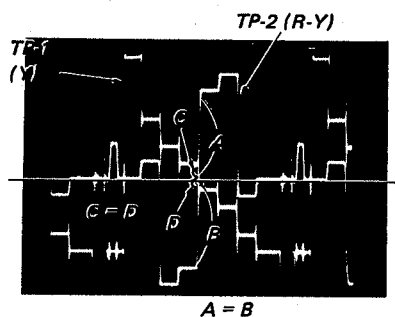
Fig. 28-1



## 29. BD BOARD (PAL) OR BD BOARD (PAL-M) Y-C DELAY TIME ADJUSTMENT



- \* Set the PAL switch of the BVM-1410P or 1410PM to the S position.
- 1. Input color-bar signal (FULL FIELD/Y REF) to the VIDEO A terminal of the set.
- 2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP2 of BG board (VERT mode of the oscilloscope is CHOP).
- 3. Adjust RV1 of BD or BM board so that the output waveform as shown in Fig. 29-1.



$$\begin{matrix} A=B \\ C=D \end{matrix}$$

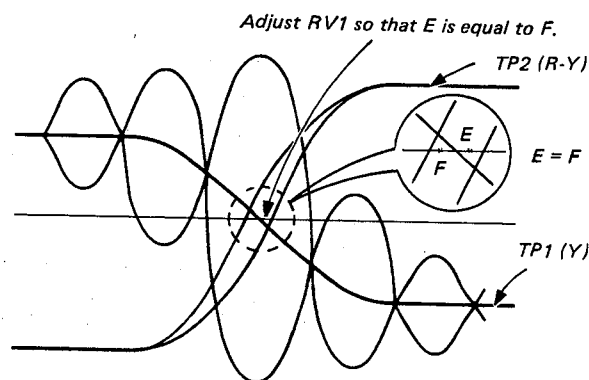
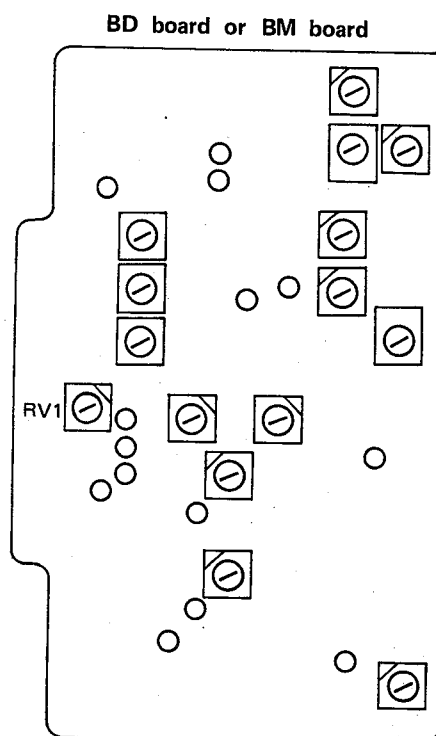
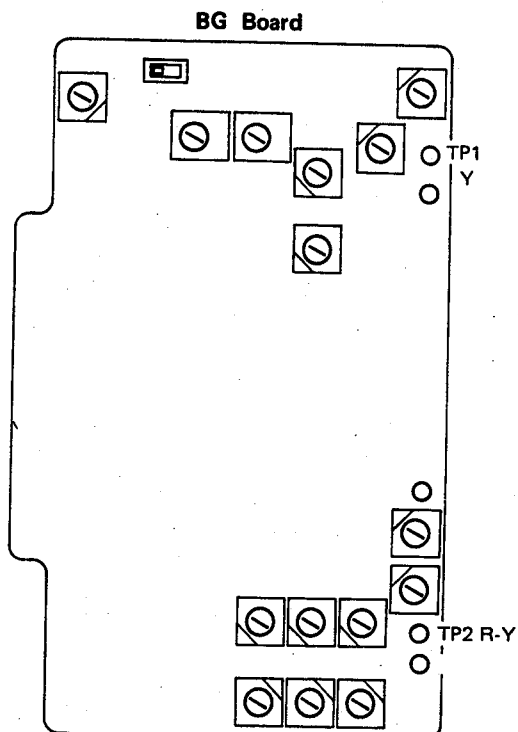
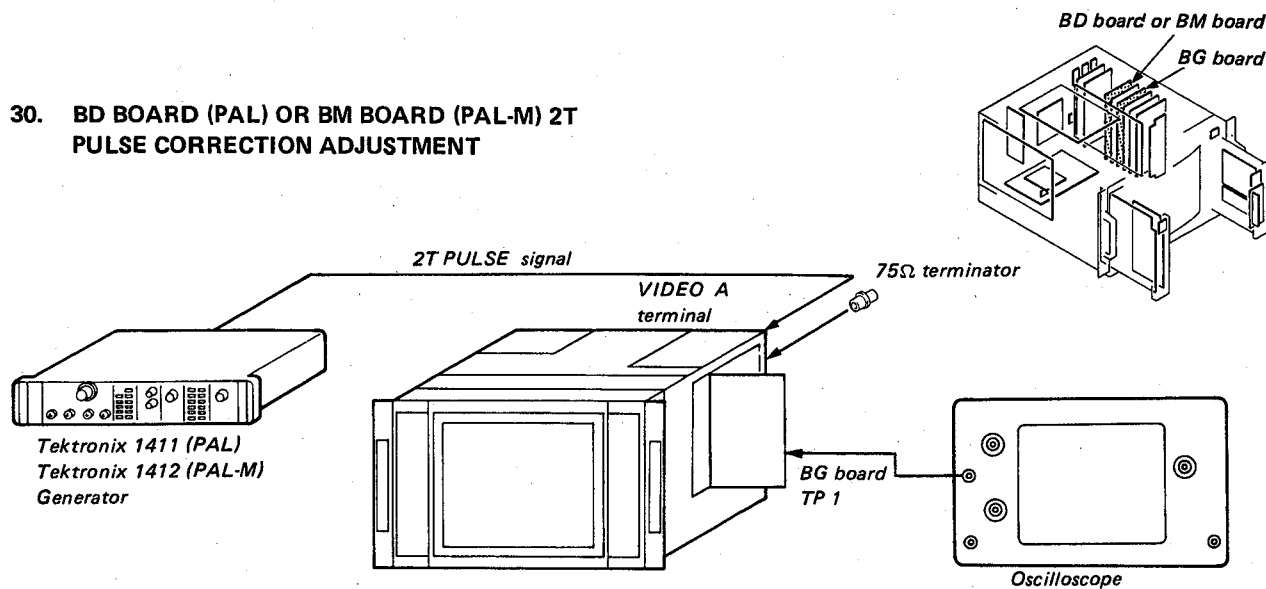


Fig. 29-1



### 30. BD BOARD (PAL) OR BM BOARD (PAL-M) 2T PULSE CORRECTION ADJUSTMENT



1. Input 2T pulse signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L2 of BD or BM board so that A is equal to B as shown in Fig. 30-1.
4. Change the input signal from 2T pulse to T pulse, and make sure the waveform balance is not lost extremely as shown in Fig. 30-1.

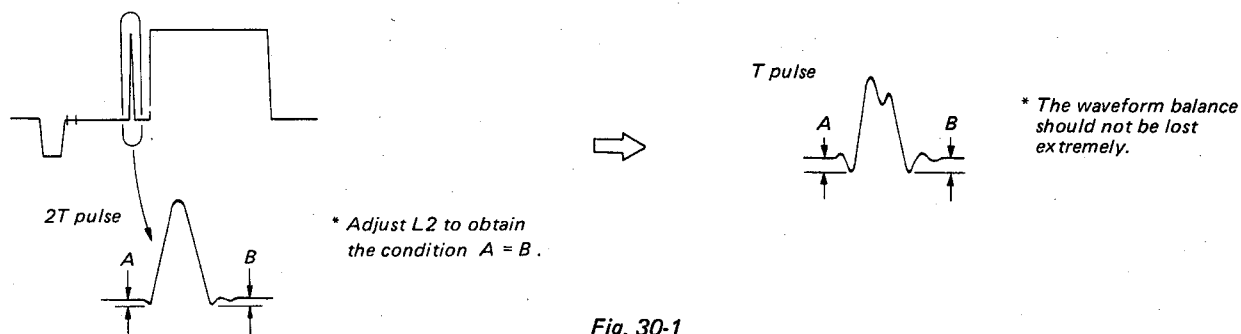
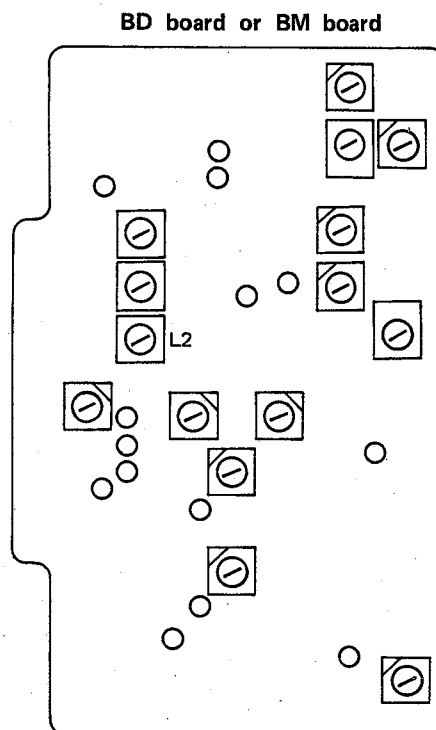
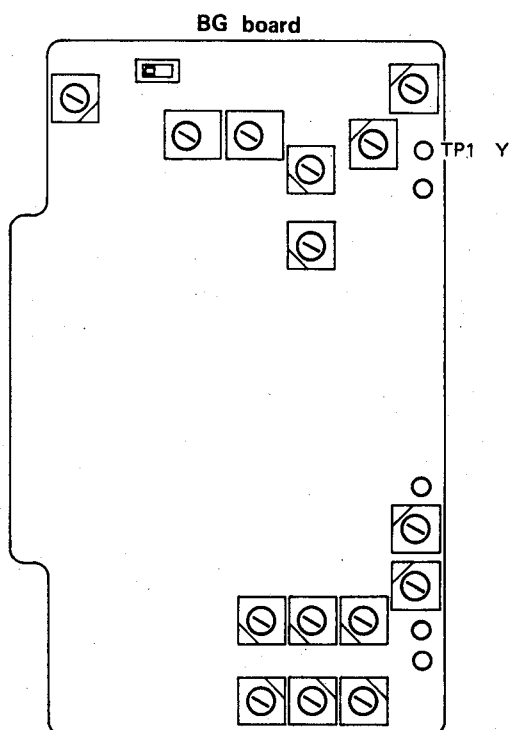
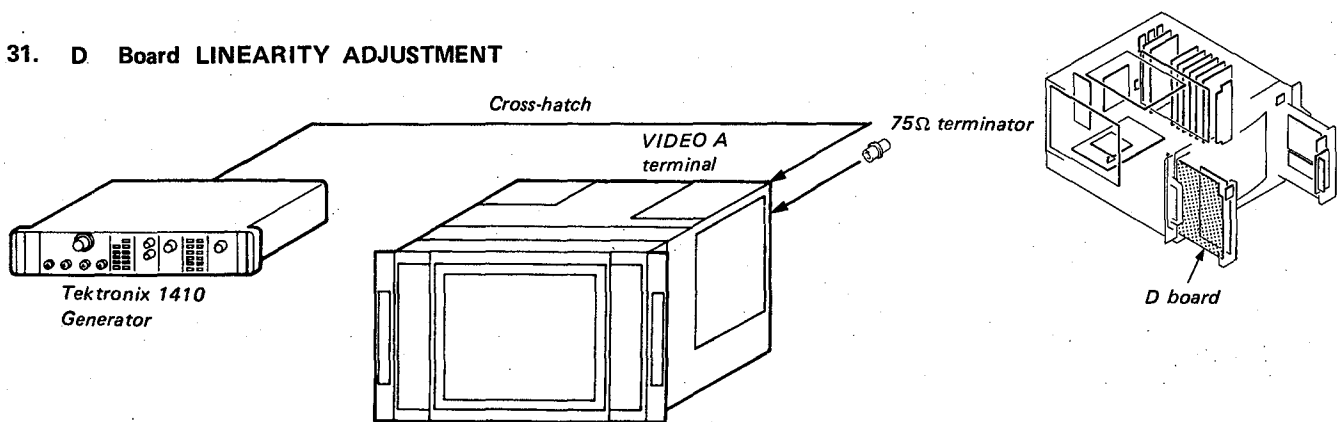


Fig. 30-1





### 31. D Board LINEARITY ADJUSTMENT



#### • Vertical Pincushion Adjustment

1. Input only the H line of cross-hatch signal.
2. Minimize the X.BOW distortion with X.BOW (RV11) on the D board as shown in third from the top of Fig 31-1.
3. Minimize the T and B pincushion distortion gain with T.B.P (RV12) on the D board as shown in second from the top of Fig 31-1.

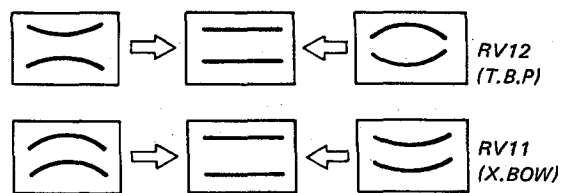
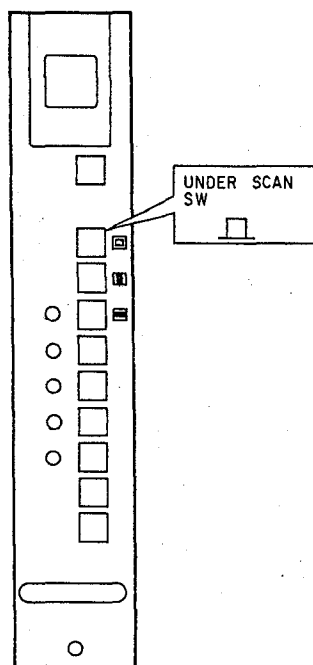
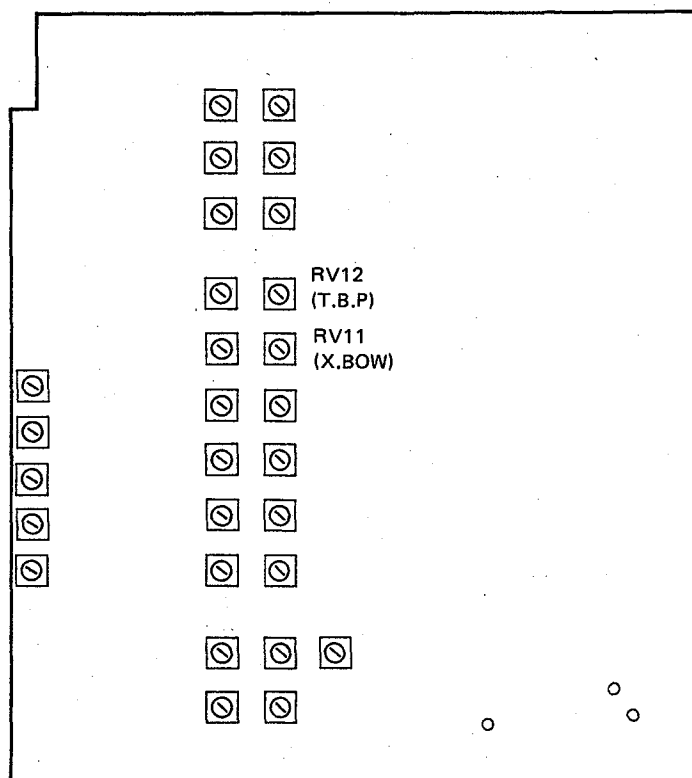


Fig. 31-1

#### FRONT PANEL (L)



#### D board



### • Vertical Lineality Adjustment

1. Input only the H line of cross-hatch signal.
2. Adjust V center with V.CENTER (RV10) at the left side of control panel.
3. Adjust the balance of V lineality with V.L.B (RV9) on the D board as shown in Fig 31-2.
4. Adjust the gain of V lineality with V.L.G (RV8) on the D board as shown in Fig 31-3.
5. Adjust the V.HEIGHT with V.H.N (RV3) on the D board.
6. Set the SCAN selector to UNDER position.

RV9 ..... V LIN BALANCE

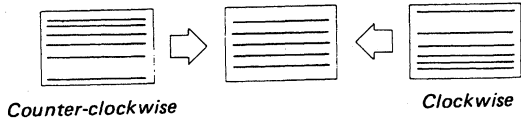


Fig. 31-2

RV8 ..... V LIN GAIN

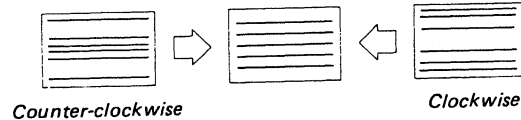


Fig. 31-3

### Side Pincushion Adjustment

1. Input only the V line of cross-hatch signal.
2. Minimize the Y.BOW distortion with Y.BOW (RV13) on the D board as shown in Fig 31-6.
3. Minimize the side pincushion distortion with S.P.N (RV5) on the D board as shown in Fig 31-4.
4. Minimize the side pincushion tilt distortion with S.P.T (RV7) on the D board as shown in Fig 31-5.
5. Set the SCAN selector to UNDER position.
6. Minimize the side pincushion distortion with S.P.U (RV6) on the D board as shown in Fig 31-4.

RV5 (S.P.N)  
RV6 (S.P.U)

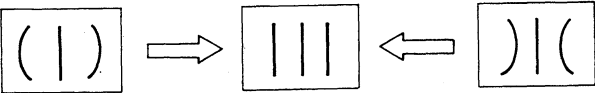


Fig. 31-4

RV7 (S.P.T)

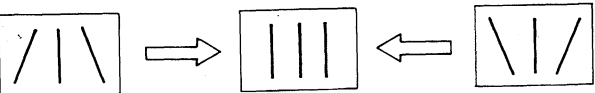


Fig. 31-5

RV13 (Y.BOW)

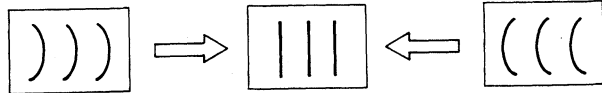


Fig. 31-6

### • Horizontal Lineality Adjustment

1. Input only the V line of cross-hatch signal.
2. Adjust the horizontal centering with H CENTER (RV14) at the left side of control panel.
3. Adjust the balance of H.lineality with H.L.B (RV28) on the D board as shown in Fig 31-7 "Change to horizontal".
4. Adjust the gain of H.lineality with H.L.G (RV27) on the D board as shown in Fig 31-8 "Change to horizontal".
5. Adjust the H.WIDTH with H.W.N (RV1) on the D board.
6. Set the SCAN selector to UNDER position.
7. Adjust the H.WIDTH with H.W.U (RV2) on the D board.

RV28 (H.L.B)

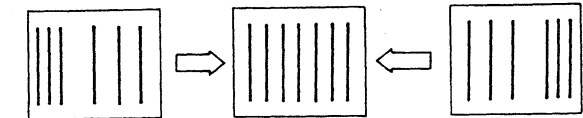


Fig. 31-7

RV27 (H.L.G)

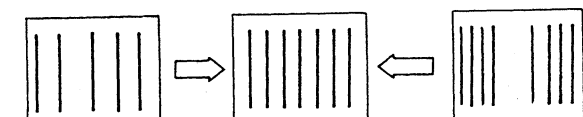
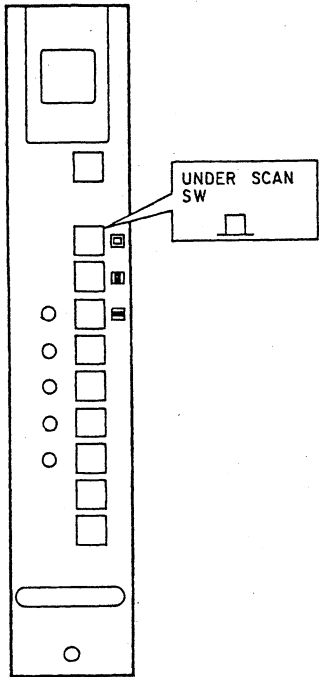
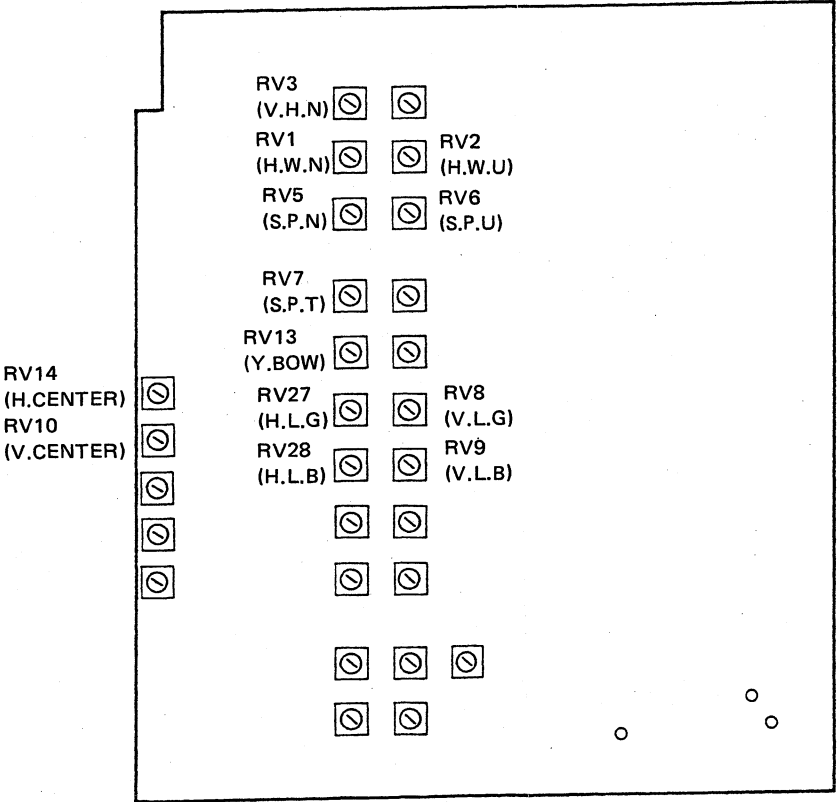


Fig. 31-8

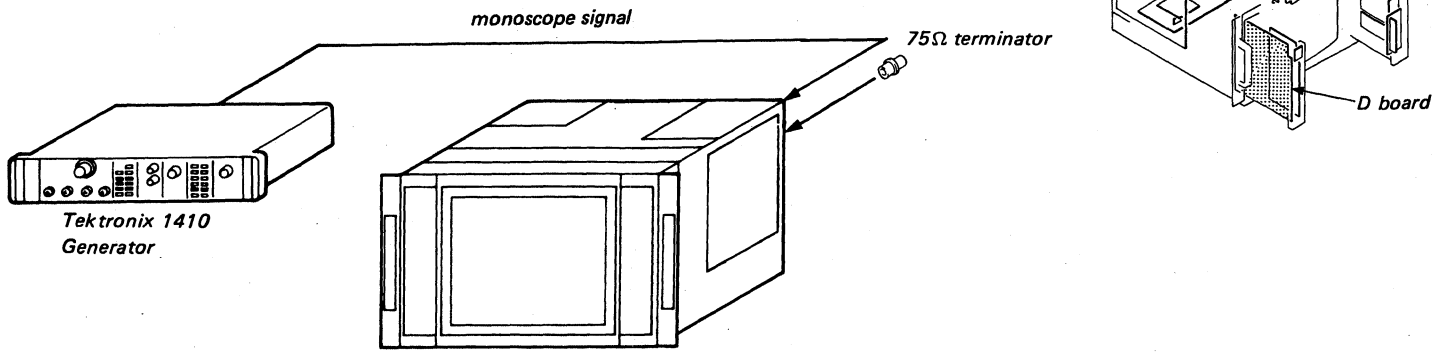
FRONT PANEL (L)



D board



31. DA Board LINEARITY ADJUSTMENT



• H.OSC Free-run Adjustment

1. Set the SYNC selector to EXT.
2. Adjust H.FREQ. (RV25) on the D board until the picture movement is still or slow.

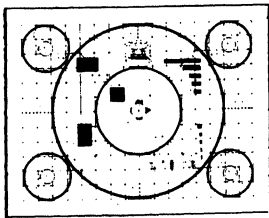


Fig. 32-1

3. Adjust H.PHASE (RV24) on the D board for both sides of raster width without signal component coincidence.

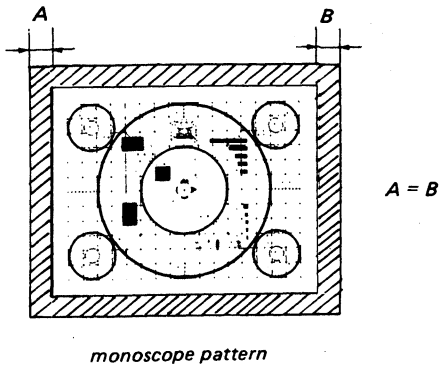


Fig. 32-3

• Horizontal Phase and Horizontal Blanking Adjustments

1. Set the SCAN selector to UNDER position.
2. Turn the horizontal blanking controls H.BLK.R fully clockwise and H.BLK.L fully counterclockwise. (When the raster at both sides of screen are not appear completely, turn H.W.U (RV2) until obtaining the raster.)

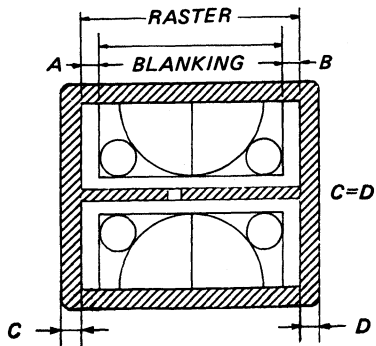


Fig. 32-2

4. Adjust H.BLK.R/H.BLK.L (RV23 and RV22) on the D board so that the raster width without signal component become half.

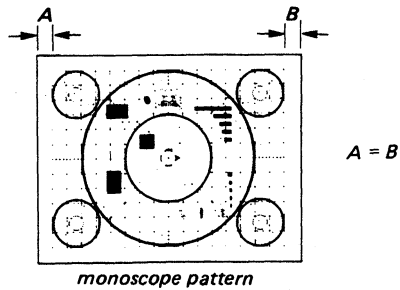
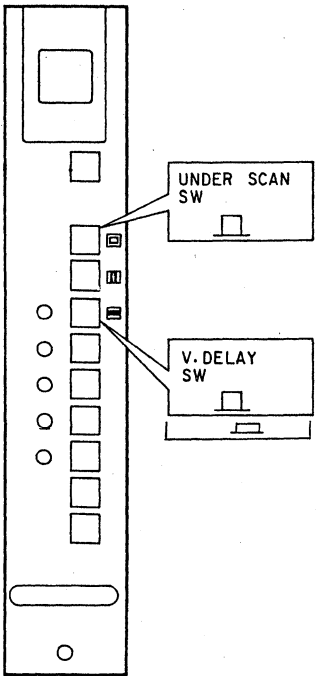
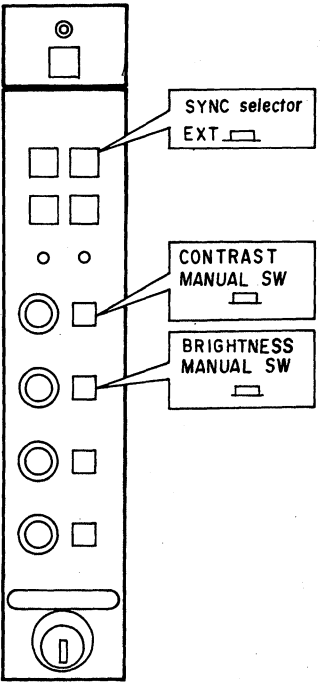


Fig. 32-4

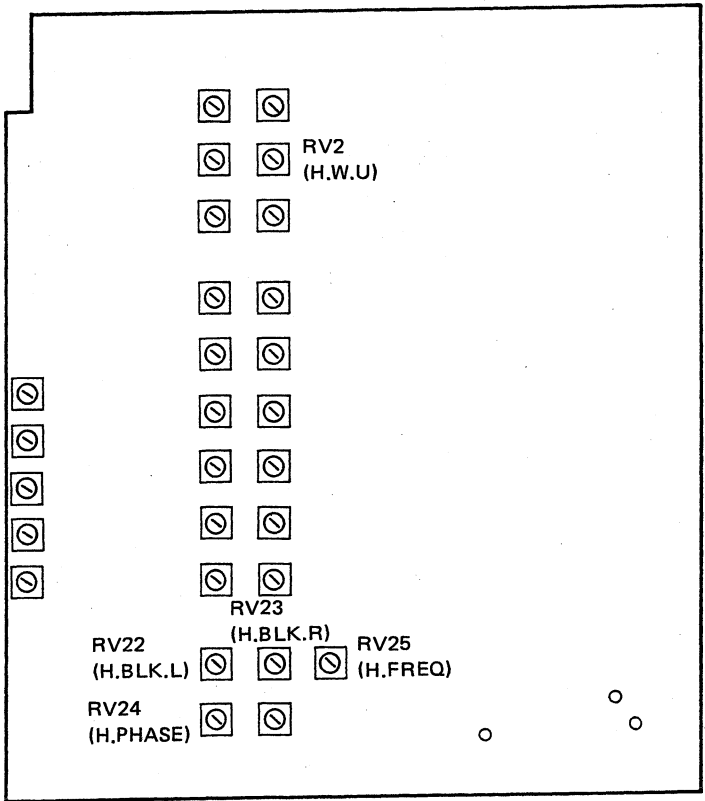
FRONT PANEL (L)

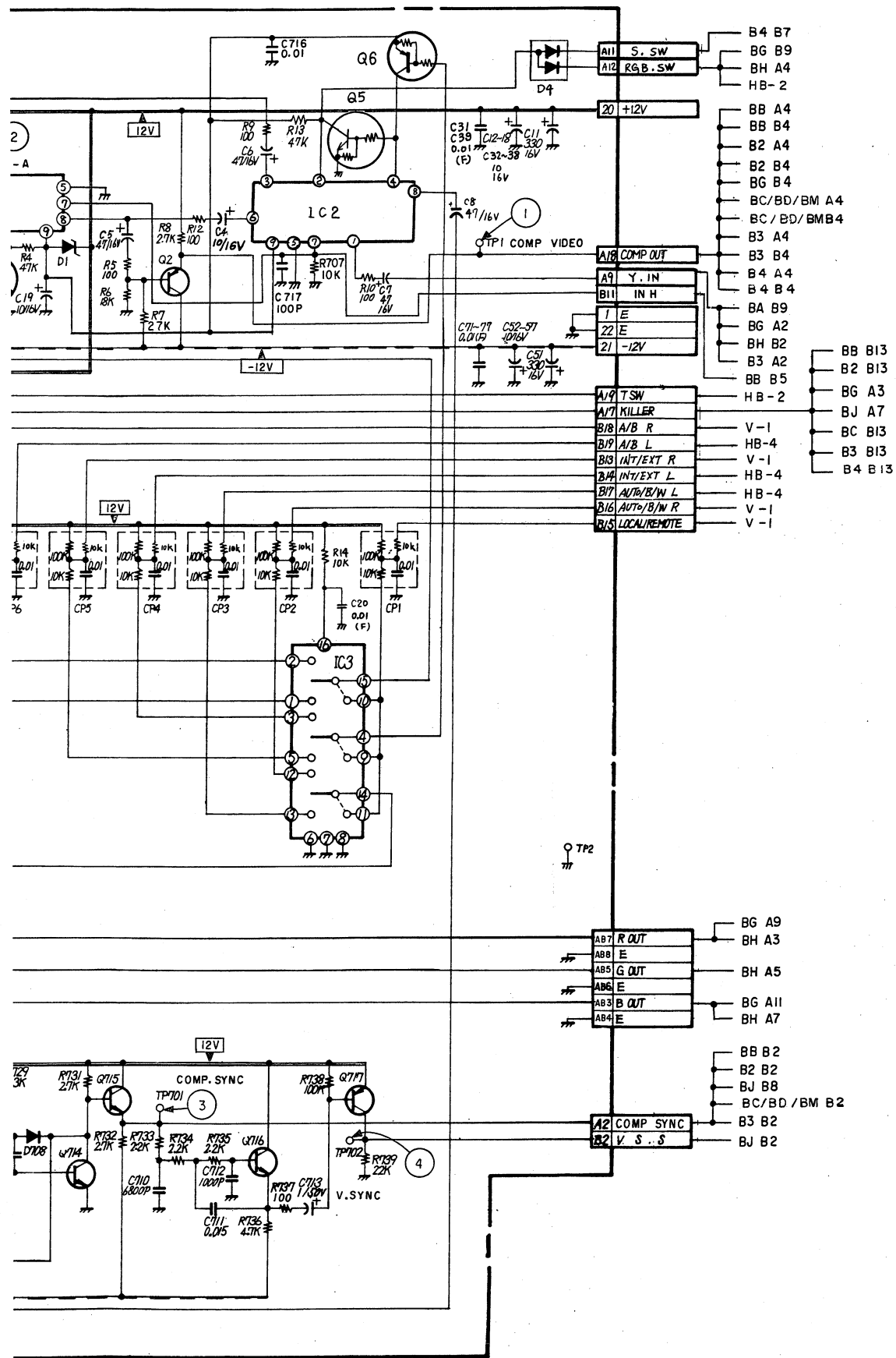


FRONT PANEL (R)



D board

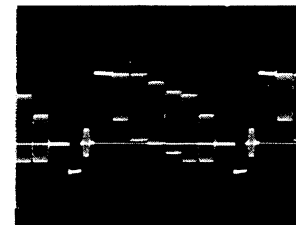




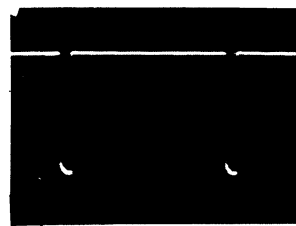
## BA BOARD

IC1	CX-894	INPUT SELECT
2	CX-894	SYNC SELECT
3	uPD4053BC	LOCAL/REMOTE SW
Q1	DTC144ES	INPUT SELECT CONTROL
2	2SA844	BUFF
3	DTC144ES	KILLER
4	DTC144ES	KILLER
5	DTC144ES	SYNC SELECT CONTROL
6	DTA144ES	INT/EXT CONTROL
101	2SC2668	VIDEO A AMP
102	2SC2668	VIDEO A AMP
103	2SC2668	VIDEO A AMP
104	2SA844	VIDEO A AMP
105	2SC2668	VIDEO A AMP
201	2SC2668	VIDEO B AMP
202	2SC2668	VIDEO B AMP
203	2SC2668	VIDEO B AMP
204	2SA844	VIDEO B AMP
205	2SC2668	VIDEO B AMP
301	2SC2668	EXT SYNC AMP
302	2SC2668	EXT SYNC AMP
303	2SC2668	EXT SYNC AMP
304	2SA844	EXT SYNC AMP
305	2SC2668	EXT SYNC AMP
401	2SC2668	R-Y/R AMP
402	2SC2668	R-Y/R AMP
403	2SC2668	R-Y/R AMP
404	2SA844	R-Y/R AMP
405	2SC2668	R-Y/R AMP
501	2SC2668	TEST/Y/G AMP
502	2SC2668	TEST/Y/G AMP
503	2SC2668	TEST/Y/G AMP
504	2SA844	TEST/Y/G AMP
505	2SC2668	TEST/Y/G AMP
601	2SC2668	B-Y/B AMP
602	2SC2668	B-Y/B AMP

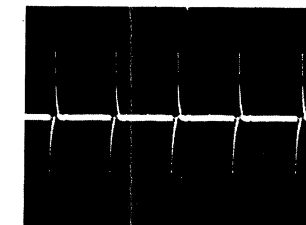
Q603	2SC2668	B-Y/B AMP
604	2SA844-D	B-Y/B AMP
605	2SC2668	B-Y/B AMP
701	2SA1048	SYNC AGC
702	2SC2785	SYNC AGC
703	2SC2785	SYNC AGC
704	2SC2785	SYNC AGC
705	2SC2785	SYNC AGC
706	2SA1048	SYNC AGC
707	2SC2785	SYNC AGC
708	2SA1048	SYNC AGC
709	2SC2785	SYNC AGC
710	2SA1115	SYNC AGC
711	2SA1048	SYNC AGC
712	2SA1115	SYNC AGC
713	2SA1048	COMP SYNC SEP
714	2SC2785	COMP SYNC SEP
715	2SC3068	COMP SYNC SEP
716	2SC2785	V SYNC SEP
717	2SA1115	V SYNC SEP
D1	RD3.0EB1	+9V REG
2	MC921	INPUT SELECT CONTROL
4	MC911	SYNC SELECT CONTROL
701	1SS119	SYNC AGC
702	RD4.3EB2	-7.5V REG
703	1SS119	SYNC AGC
704	1SS119	SYNC AGC
705	1SS119	SYNC AGC
706	1SS119	SYNC AGC
707	1SS119	COMP SYNC SEP
708	1SS119	COMP SYNC SEP
709	1SS119	SYNC AGC
710	1SS119	SYNC AGC



① 1Vp-p (H)  
② 1Vp-p (H)

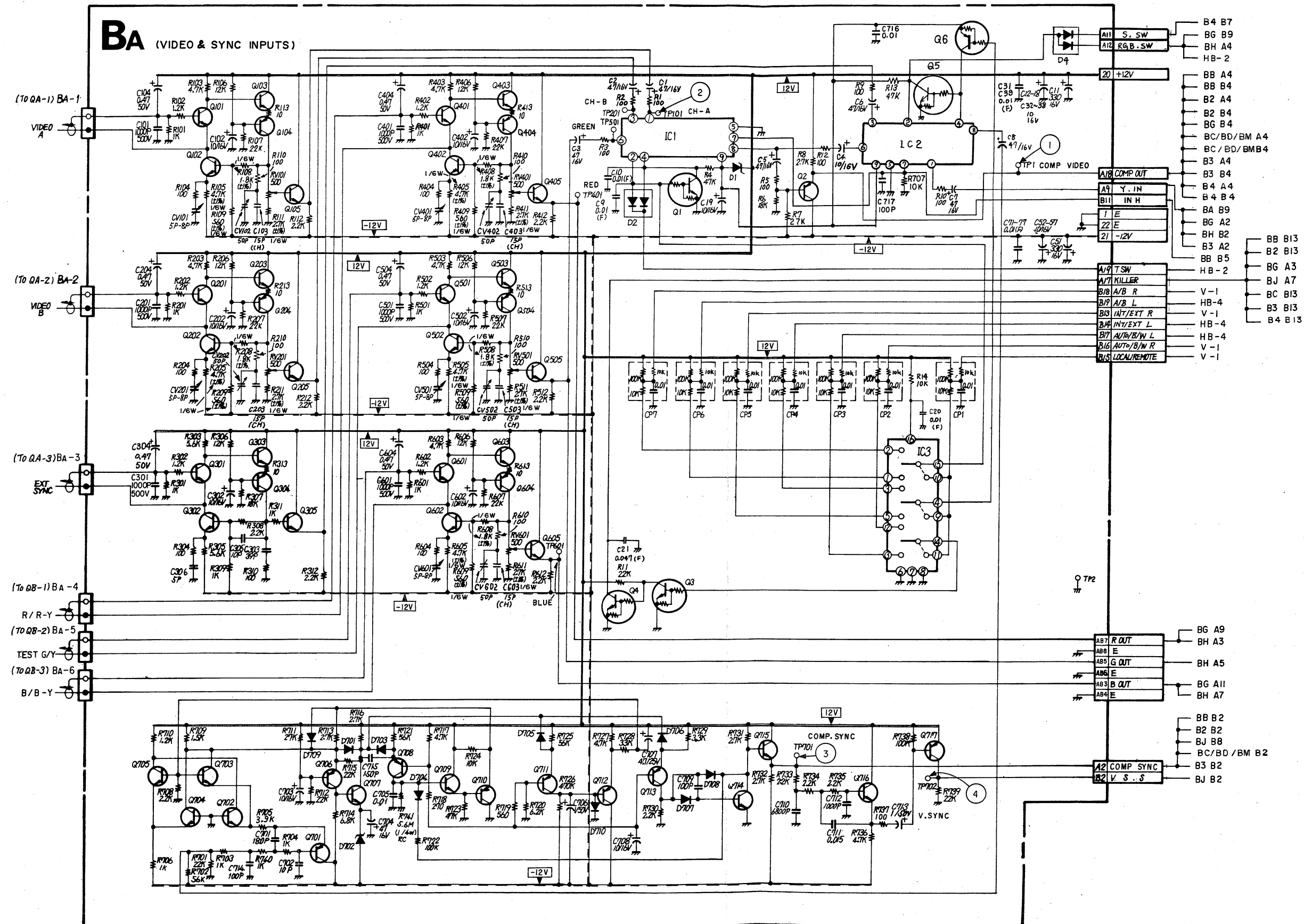


③ 12Vp-p (H)



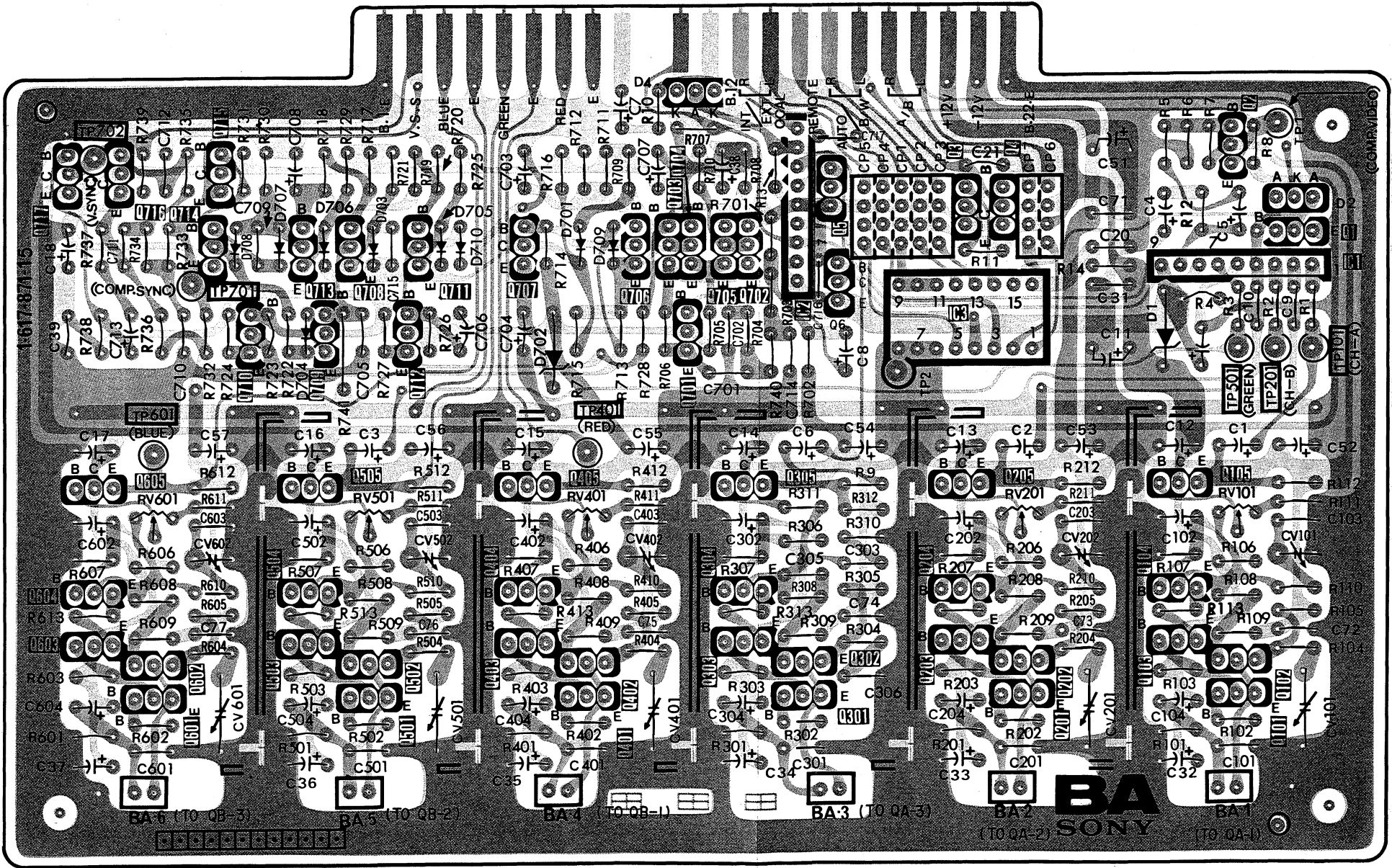
④ 12Vp-p (V)

BA board (SYNC SELECT & SYNC SEP. HOOK UP)



BA board (SYNC SELECT & SYNC SEP, HOOK UP)

IC	2										3			1				
Q	717	716	715	713	708	711	707	706	703	705	702	5	3	4	2	1		
			714			712			704									
	605		710		709				701									
	604			505			405			305			205		105			
	603	602		504			404			304			204		104			
	601		503		502		403	402		303	302		203	202	103	102		
					501			401			301			201		101		
D	708 707 706 703 705 710										101 709	4	2					
	704										702		1					
TP	TP702	TP701										TR401	TP2			TP1		
ADJ	RV601	CV602	RV501	CV502	CV501	RV401	CV402	CV401	RV201	CV202	CV201	TP501	TP201	TP101				
		CV601										RV101		CV102	CV101			





- Conductor side pattern
- Component side pattern








5-3. MOUNTING AND SCHEMATIC DIAGRAMS

Note:



Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.


Note: Les composants identifiés par une trame et par une marque  sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

- All capacitors are in  $\mu\text{F}$  unless otherwise noted. p :  $\mu\text{F}$  50 WV or less are not indicated except for electrolytics.
- All resistor are in ohms, 1/2W on the C board and 1/4W on the rest of the boards unless otherwise specified.  $k\Omega = 1000\Omega$ ,  $M\Omega = 1000k\Omega$
-  : nonflammable resistor.
- $\Delta$  : internal component.
- $\text{---}$  : direct connection to points marked  $\text{---}$  on the chassis
-  : panel designation.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.  
When replacing components identified by , make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by  and repeat the adjustment until the specified value is achieved.  
Refer to R52, R53, R67, R68, R72, R75, R115, R106, R108.  
Adjust on page 4-11 ~ 4-16.  
When replacing the part in below table, be sure to perform the related adjustment.

Reference information

- RESISTOR : RN METAL FILM  
: RC SOLID  
: FPRD NONFLAMMABLE CARBON  
: FUSE NONFLAMMABLE FUSIBLE  
: RS NONFLAMMABLE WIREWOUND  
: RB NONFLAMMABLE CEMENT  
COIL : LF-8L MICRO INDUCTOR  
CAPACITOR: TA TANTALUM  
: PS STYROL  
: PP POLYPROPYLENE  
: PT MYLAR  
: MPS METALIZED POLYESTER  
: MPP METALIZED POLYPROPYLENE  
: ALB BIPOLAR  
: ALT HIGH TEMPERATURE  
: AIR HIGH RIPPLE

Part replaced (  )	Adjustment (  )
C59, IC3, R67, R68, R78, RV2 ... (GA board)	+B MAX (R67, R68) Page 4-11.
Q13, Q14, R52, R53 (GA board) D5, D6, D7, D8, Q3, Q4, Q5, R4, R5, R19, R20, R21, R22 ... (GB board)	+B PROTECTOR (R52, R53) Page 4-11.
R61, R62, R71, R73, R74, R88, RV1, IC2, IC3 (EA board) HV block	HV REG (R72, R75) Page 4-15
D24, D25, D27, D29, IC4, R89, R90, R102, R103, R105, R107, R109, R110, R111 (EA board) HR block	HV HOLD DOWN (R106, R108) Page 4-14
D24, D25, D27, D29, IC4, R89, R90, R102, R103, R112, R113, R114, R116, R117, R118, R119, R120, R121, R122, R123, R124 (EA board) FBT (P board)	BEAM CURRENT PROTECTOR-1 (R115) Page 4-15

- Voltages are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- Reading are taken with a 10 M $\Omega$  digital multimeter.
-  : adjustment for repair.
- $\text{---}$  : B+ bus.
- $\text{---}$  : B- bus.
- $\times$  : Can not be measured.
- Readings and waveforms are taken with a color-bar signal input and with a 75 $\Omega$  terminator connected to an open terminal.

- Switches and controls are set as follows unless otherwise noted.

FRONT PANEL (R)

- |                             |        |          |
|-----------------------------|--------|----------|
| 1. INPUT selector           | A      | HC board |
| 2. SYNC selector            | INT    |          |
| 3. MODE selector            | AUTO   | HG board |
| 4. CONTRAST MANUAL switch   | PRESET |          |
| 5. BRIGHTNESS MANUAL switch | PRESET |          |
| 6. CHROMA MANUAL switch     | PRESET |          |
| 7. PHASE MANUAL switch      | PRESET |          |

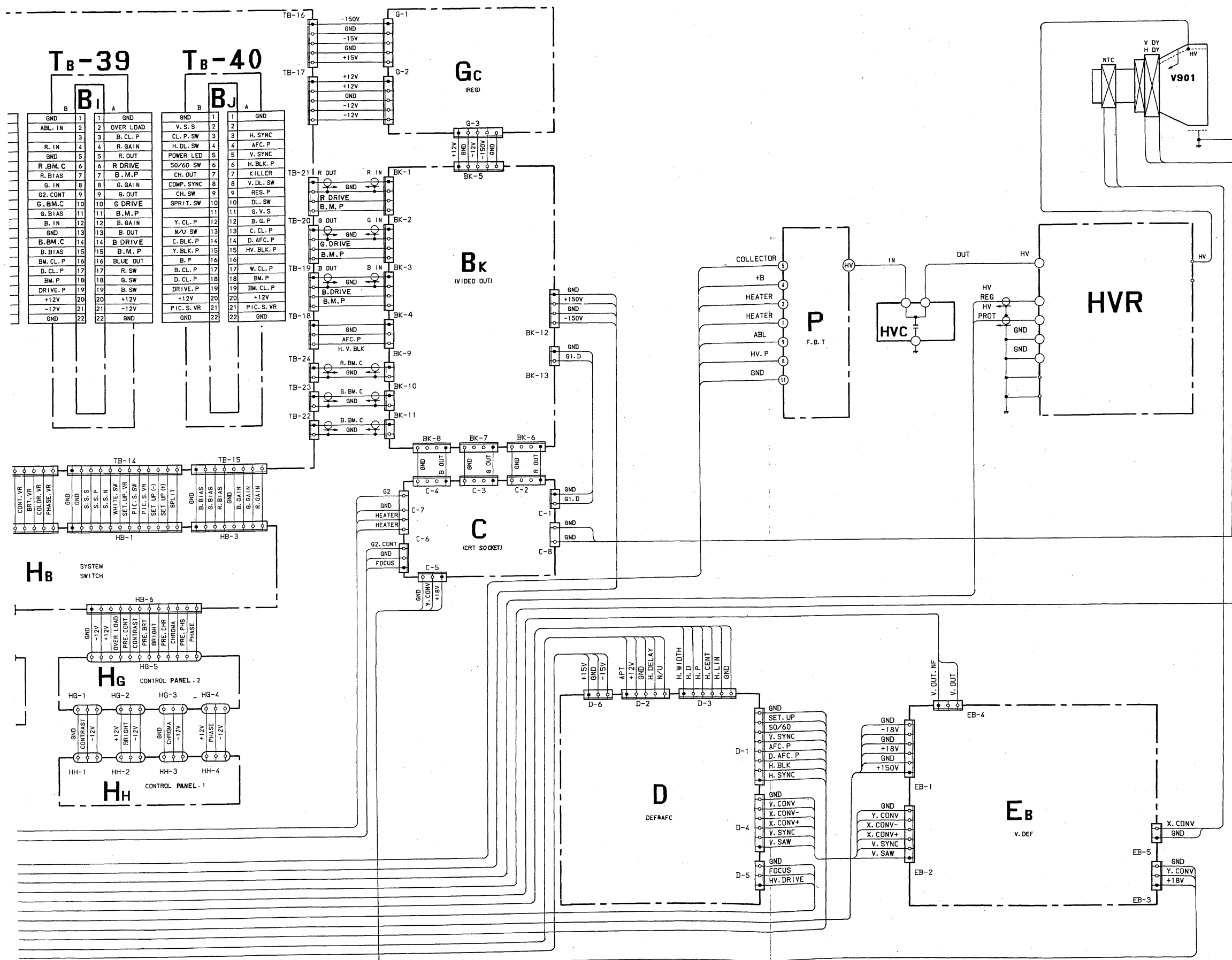
FRONT PANEL (L)

- |                                                |      |          |
|------------------------------------------------|------|----------|
| 8. SCAN MODE switch                            |      | HA board |
| <input checked="" type="checkbox"/> UNDER SCAN | NOR  |          |
| <input checked="" type="checkbox"/> H. DELAY   | NOR  |          |
| <input checked="" type="checkbox"/> V. DELAY   | NOR  |          |
| 9. SCREEN switch (R)                           | NOR  |          |
| 10. SCREEN switch (G)                          | NOR  |          |
| 11. SCREEN switch (B)                          | NOR  |          |
| 12. APT switch                                 | NOR  |          |
| 13. BLUE ONLY switch                           | NOR  |          |
| 14. COMB/TRAP filter selector                  | TRAP |          |

SUB CONTROL PANEL

- |                                   |         |          |
|-----------------------------------|---------|----------|
| 15. INPUT SELECT buttons          | B       | HB board |
| 16. COLOR STANDARD buttons        | NTSC    |          |
| 17. FILTER switch                 | OFF     |          |
| 18. MATRIX switch                 | OFF     |          |
| 19. PAL/SECAM mode selector       | D(L)    |          |
| 20. WHITE/OPERATE/SET UP selector | OPERATE |          |
| 21. SPRIT SCREEN switch           | OFF     |          |
| 22. CROSS HATCH switch            | OFF     |          |
| 23. VITC switch                   | OFF     |          |
| 24. PIC. SET UP switch            | OFF     | D board  |
| 25. AFC switch                    | 2m sec  |          |

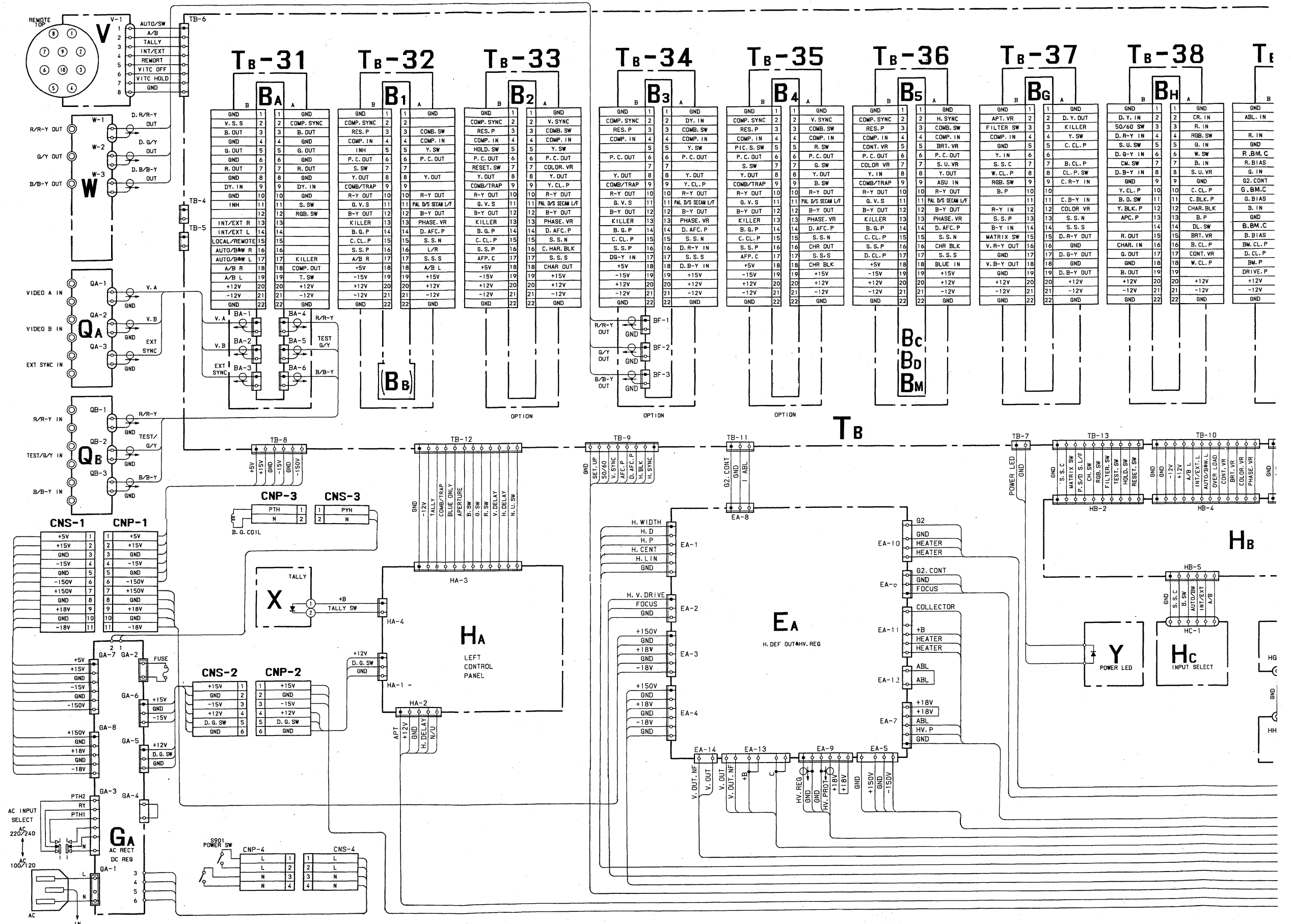
# FRAME FRAME





# FRAME FRAME

5-2. FRAME WIRING DIAGRAM





D K

EEN K

JE K

CRT

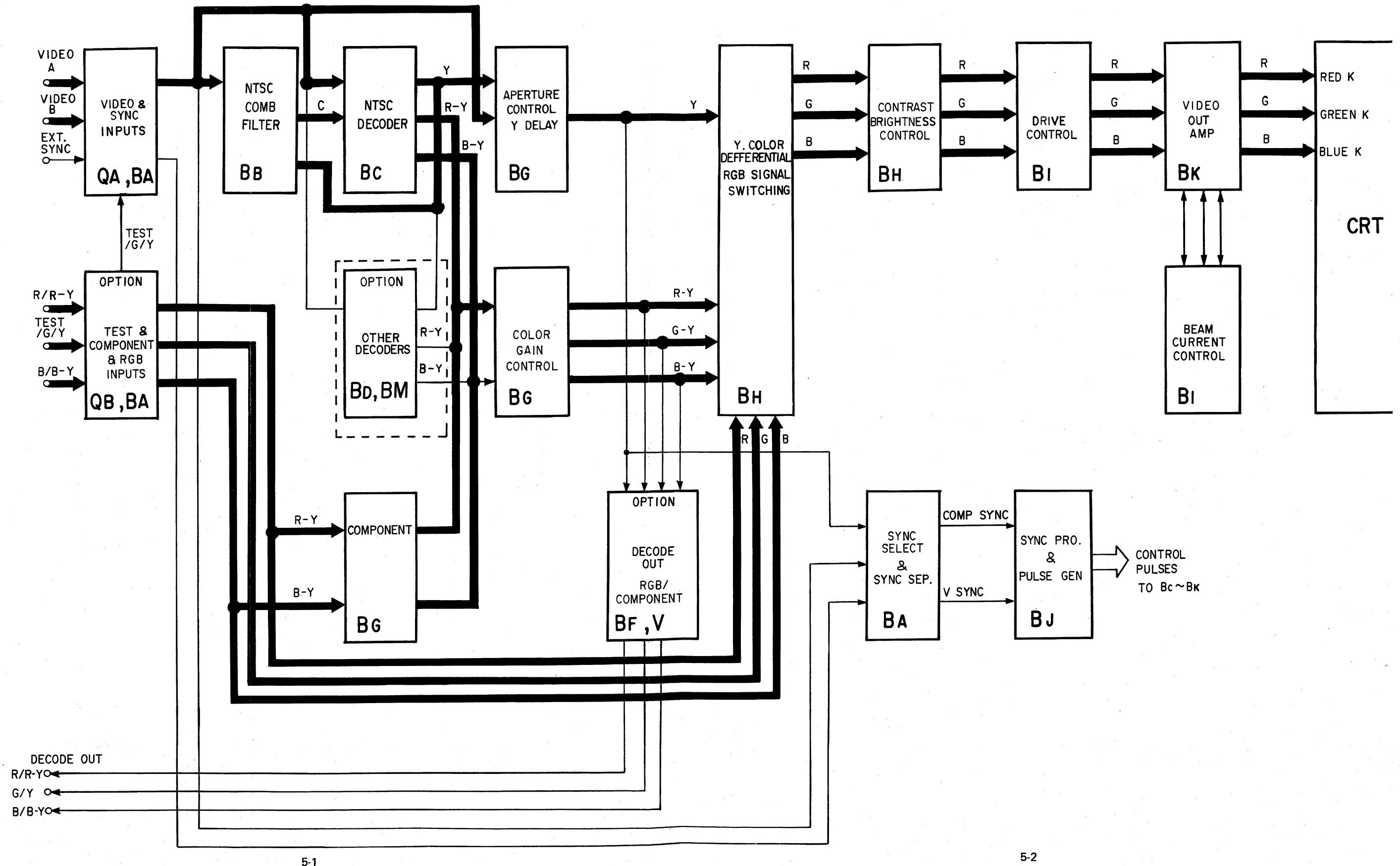


# BLOCK DIAGRAMS BLOCK DIAGRAMS

## SECTION 5 DIAGRAMS

5-1. BLOCK DIAGRAM  
SIGNAL PROCESSING BLOCK DIAGRAM

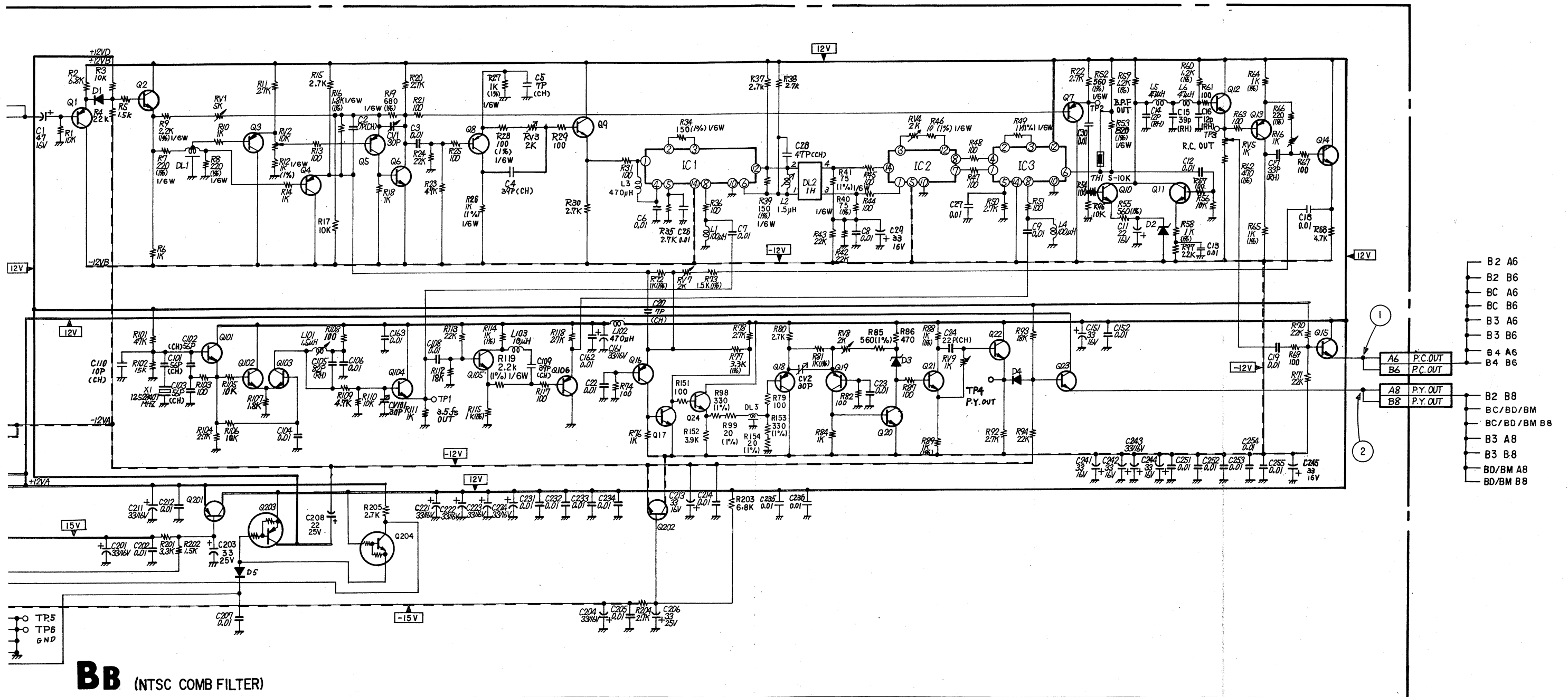
COMPOSITE VIDEO/Y



5-1

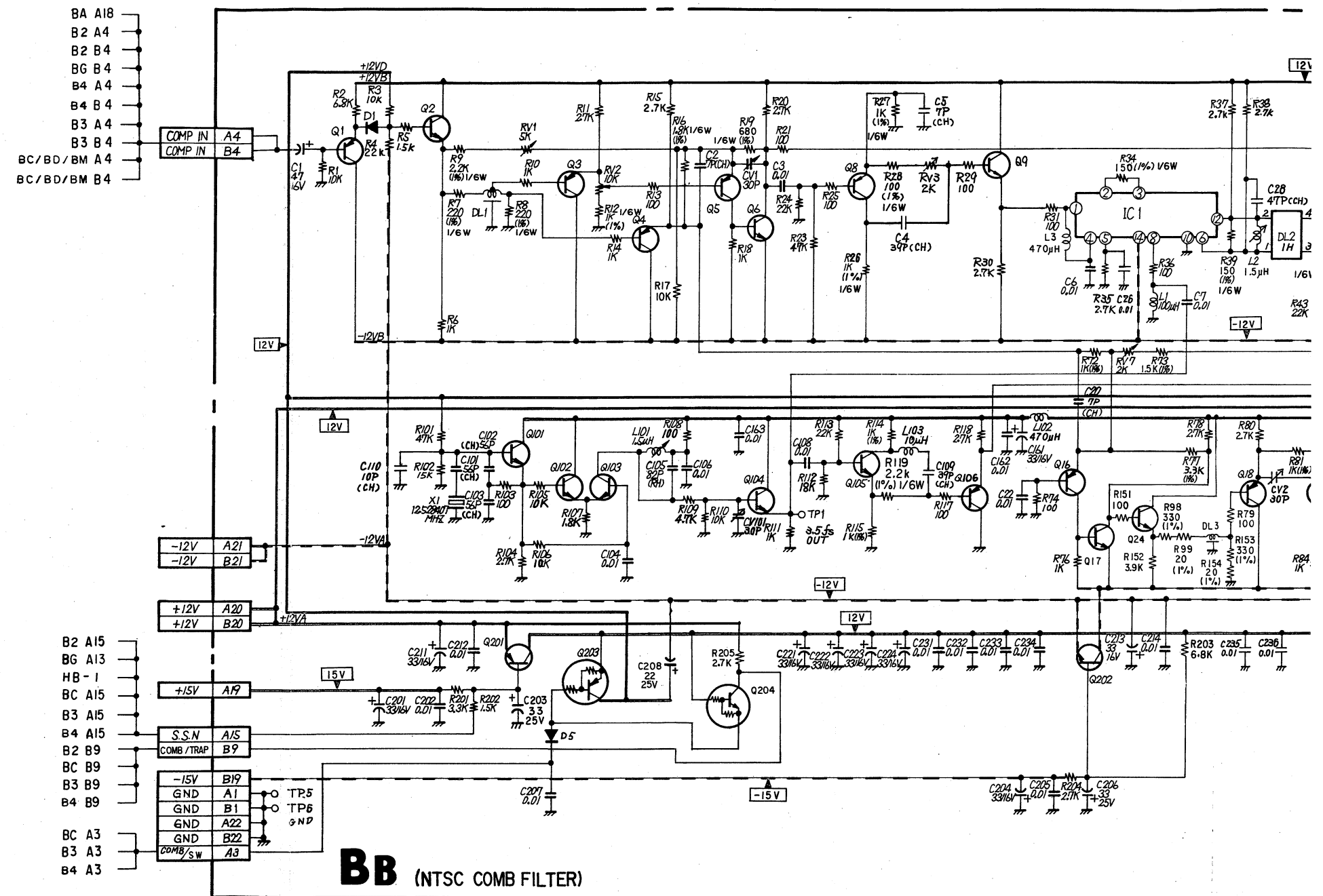
5-2

BB board (NTSC COMB FILTER) (BVM-1315 ONLY)



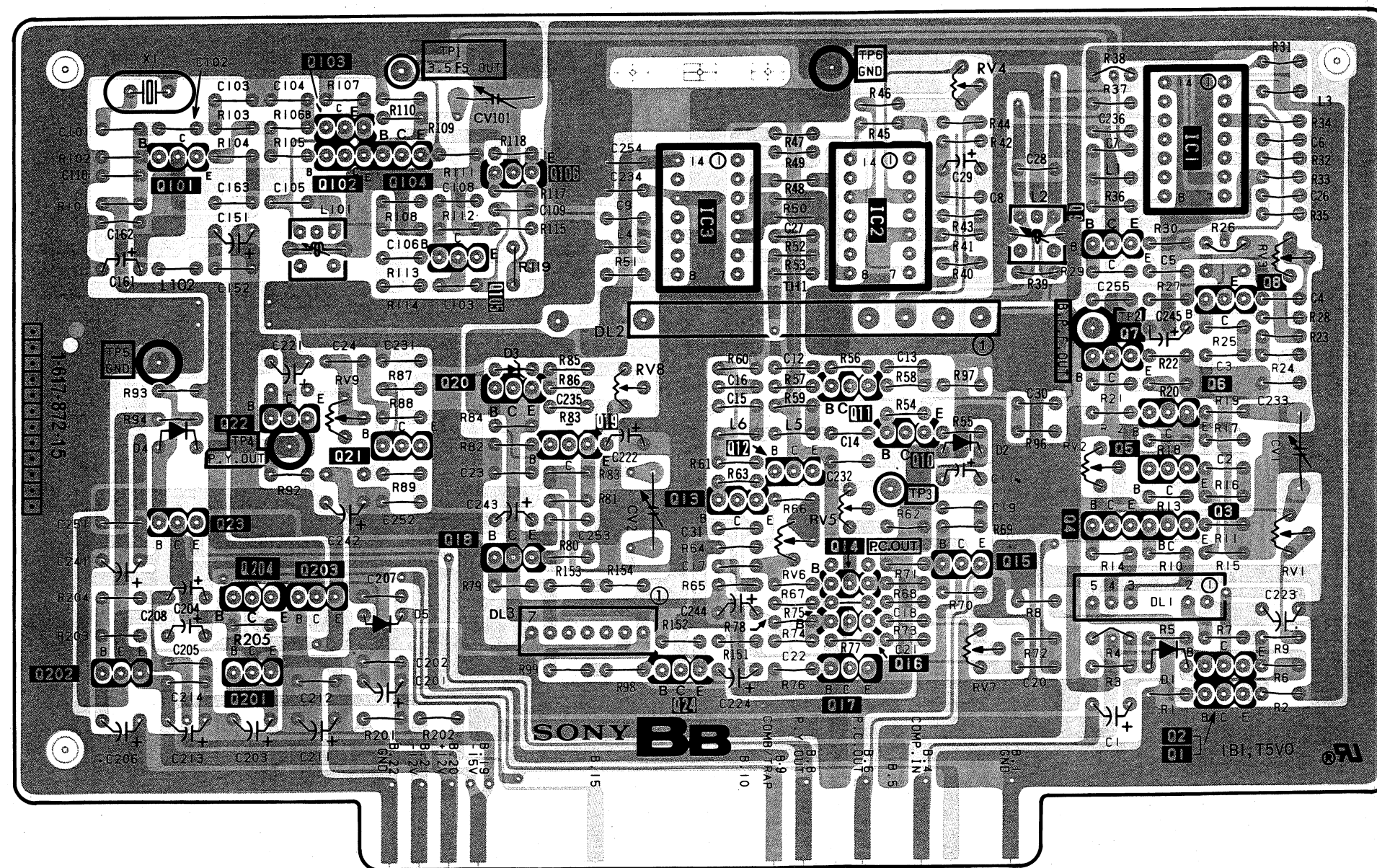
## BB BOARD

1C1	MC1496P	MODULATOR
2	uA733CN	AMP
3	MC1496P	DEMODULATOR
q1	2SA844	BUFF
2	2SC403SP	BUFF
3	2SA844	140NS DELAY
4	2SA844	280NS DELAY
5	2SA844	CHROMA PROCESS
6	2SC403SP	CHROMA PROCESS
7	2SA844	B.P.F. BUFF
8	2SA844	CHROMA PROCESS
9	2SC403SP	CHROMA PROCESS
10	2SC403SP	P.C. PROCESS
11	2SC403SP	P.C. PROCESS
12	2SC403SP	P.C. BUFF
13	2SA844	P.C. DELAY
14	2SC403SP	P.C. DELAY
15	2SC3068	P.C. BUFF
16	2SA844	Y PROCESS
17	2SC403SP	Y PROCESS
18	2SA844	Y BUFF
19	2SA844	Y AMP
20	2SC403SP	Y AMP
21	2SC403SP	Y DELAY
22	2SC403SP	Y DELAY
23	2SC3068	Y BUFF
24	2SC403SP	
101	2SC403SP	12.5MHz OSC.
102	2SC403SP	12.5MHz OSC.
103	2SC403SP	12.5MHz OSC.
104	2SC403SP	OSC. BUFF
105	2SC403SP	OSC. PHASE
106	2SA844	OSC. PHASE
201	2SB734	NTSC SW
202	2SD774	NTSC SW
203	DTA124ES	COMB SW
204	DTC144ES	COMB SW
d1	1SS119	INPUT SW
2	RD8.2ES-T1B	P.C. PROCESS
3	RD5.6ES-T1B	Y AMP
4	1SS119	Y SW
5	1SS119	COMB SW



BB board (NTSC COM FILTER) (BVM-1315 ONLY)

IC	3			2			1		
Q	101	22	103	104	105	106	9	6	8
D	202	23	204	203	21	20	11	5	2
TP	TP5	TP4	RV9	TP1	CV101	RV8	TP6	RV4	TP2
ADJ					CV2	RV6	RV5	RV7	RV3

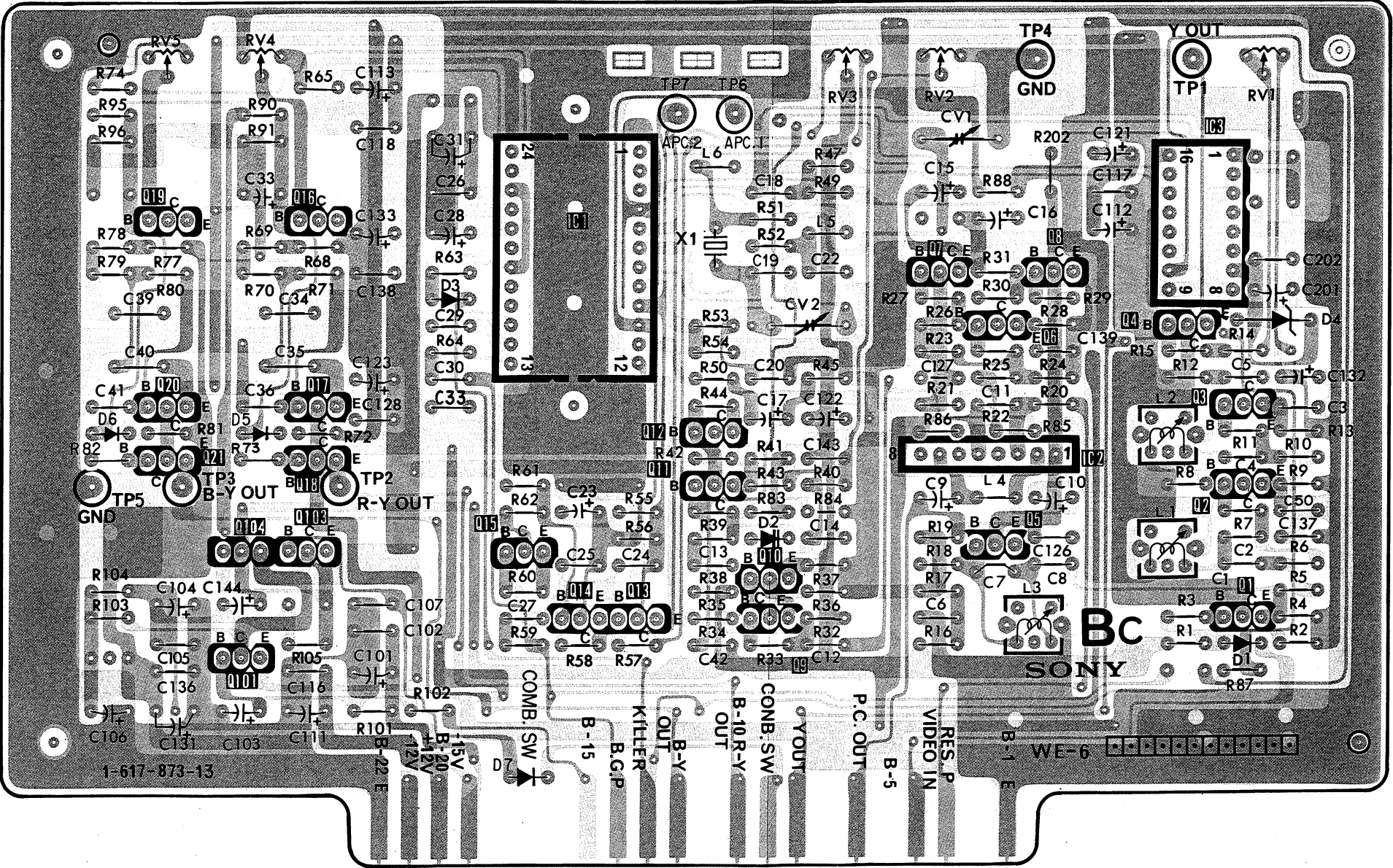


- : Conductor side pattern
- : Component side pattern



BC Board (NTSC DECODER Y. TRAP) (BVM-1315 ONLY)

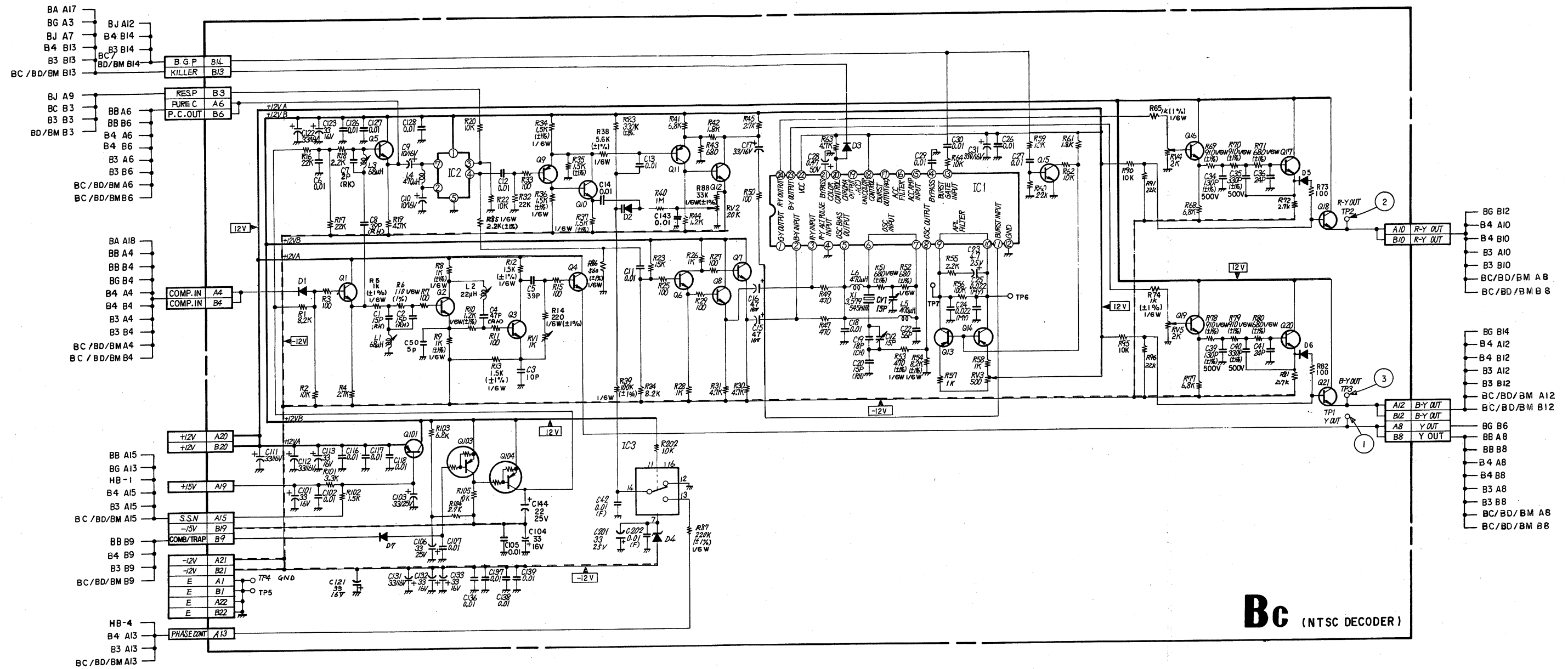
IC	1										2		3													
Q	19 20 21		16 17 18		104 103 101		15		14		13		12 11		10 9		7		6		8		4		3 2 1	
D	6		5		3		7		2		RV3		RV2		TP4		TP1		RV1		4					
TP	RV5		RV4		TP7		TP6		RV3		RV2		TP4		TP1		RV1									
ADJ	TP5		TP3		TP2		CV2		CV1		TP4		TP1		RV1											



• : Conductor side pattern  
• : Component side pattern

BC	BC
----	----

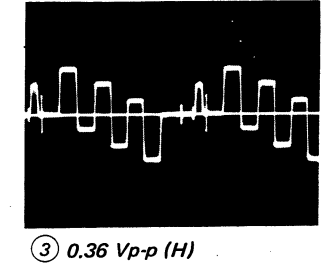
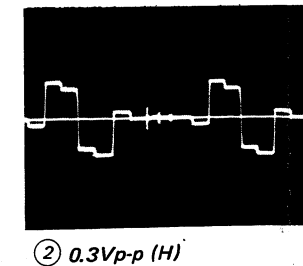
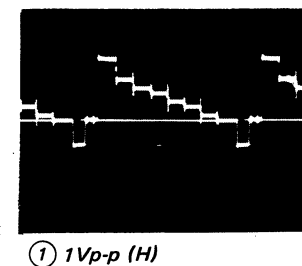
**BC Board (NTSC DECODER Y, TRAP) (BVM-1315 ONLY)**



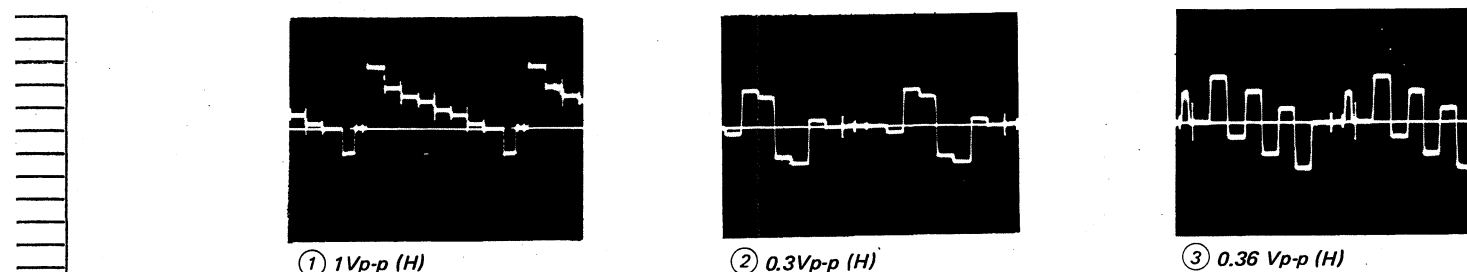
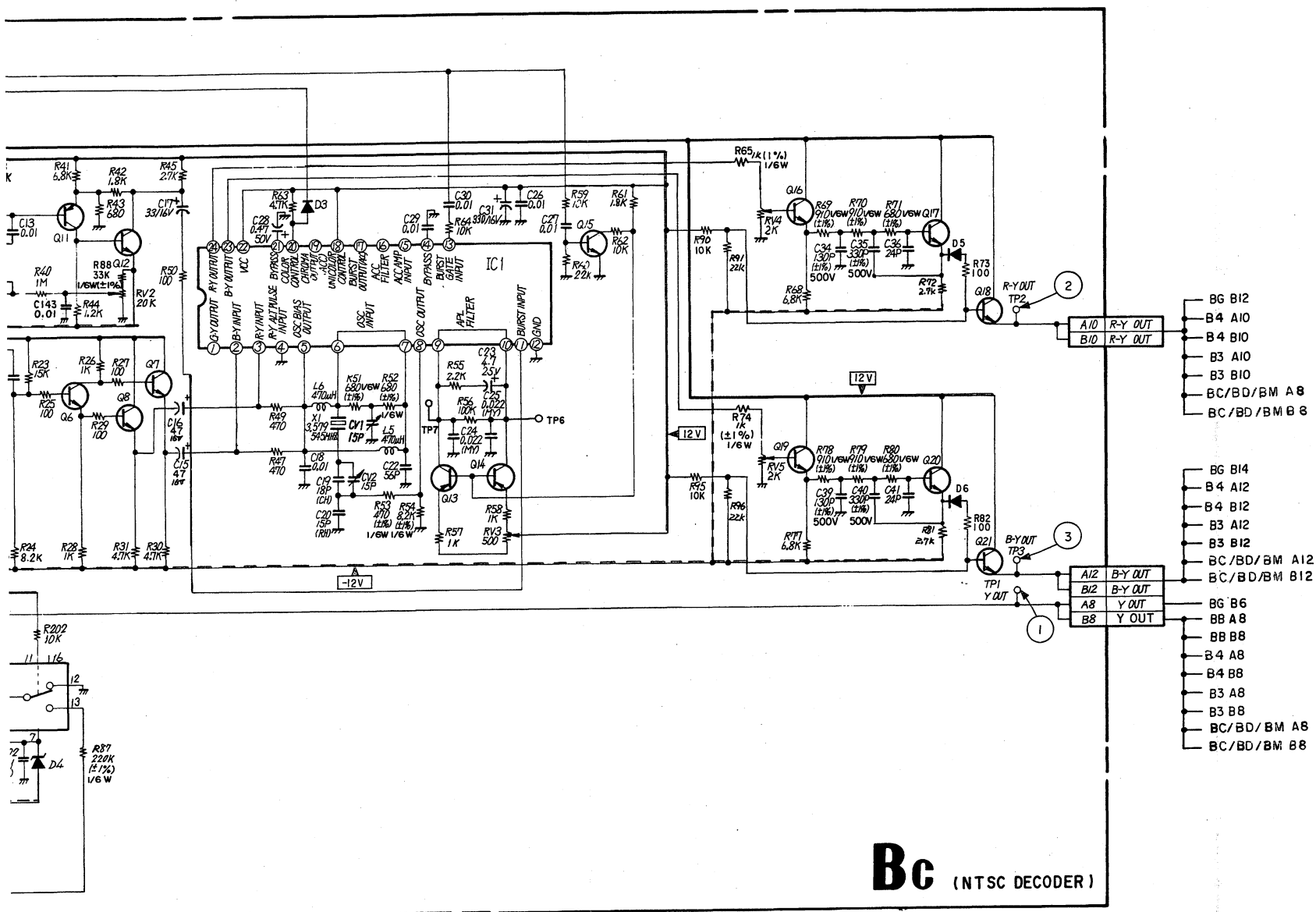
## BC BOARD

IC1	TA7193P	DEMODULATOR
2	CX20061	RESIDUAL SWITCH
3	UPD4053BC	ANALOG SWITCH
Q1	2SC403SP	BUFF.
2	2SC403SP	ACTIVE FILTER
3	2SC403SP	Y-DELAY CORRECT
4	2SC3068	BUFF.
5	2SC3068	BUFF.
6	2SC403SP	AMP.
7	2SC403SP	BUFF.
8	2SC403SP	BUFF.
9	2SA844	PHASE CONTROL
10	2SC403SP	PHASE CONTROL
11	2SA844	PHASE CONTROL
12	2SC403SP	PHASE CONTROL
13	2SA844	APL FILTER

14	2SA844	APL FILTER
15	2SC403SP	APL FILTER
16	2SC403SP	LOW PASS FILTER
17	2SC403SP	LOW PASS FILTER
18	2SC3068	BUFF.
19	2SC403SP	LOW PASS FILTER
20	2SC403SP	LOW PASS FILTER
21	2SC3068	BUFF.
101	2SB734	SYSTEM SW.
103	DTA124ES	COMB. SWITCH
104	DTA124ES	COMB. SWITCH
D1	1SS119	SYSTEM SWITCH
2	1T25	PHASE CONTROL
3	1SS119	KILLER SWITCH
4	RD9.1EB2	SWITCH BIAS.
5	1SS119	SYSTEM SWITCH
6	1SS119	SYSTEM SWITCH
7	1SS119	PROTECTOR



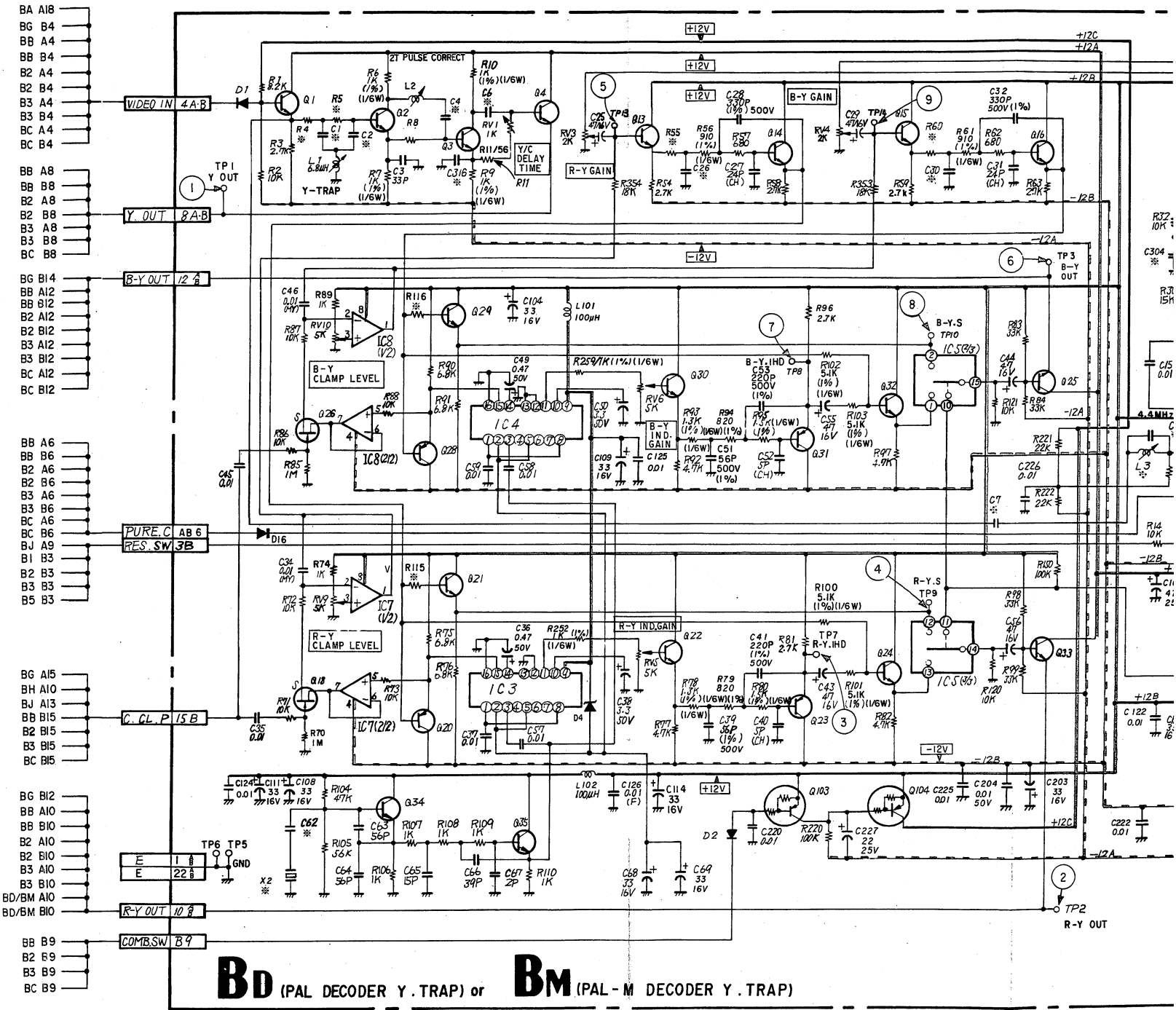




BD board (PAL DECODER Y.TRAP) (BVM-1415P ONLY)  
BM board (PAL-M DECODER Y.TRAP) (BVM-1415PM ONLY)

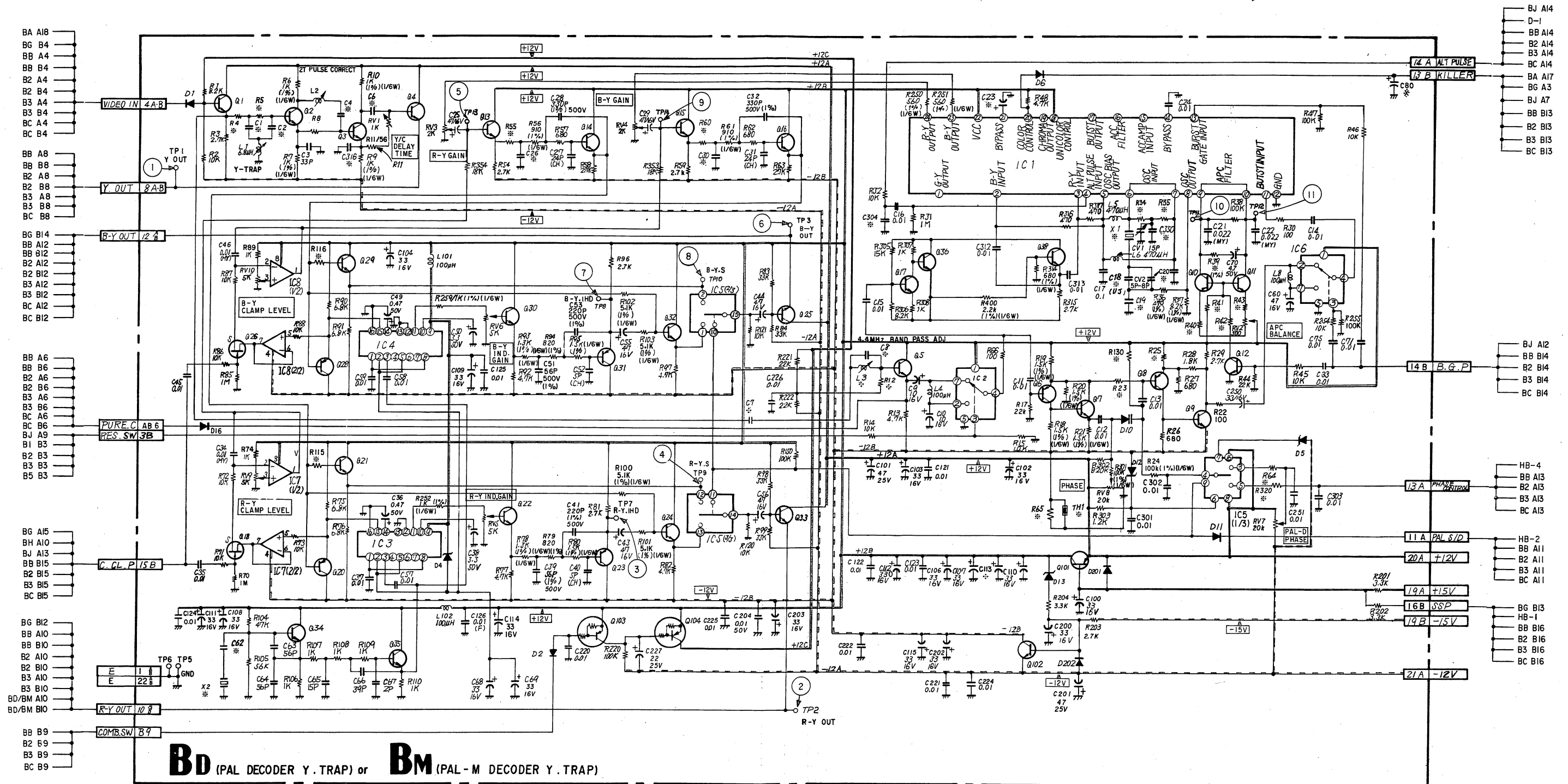
\*NOTE

Model	BD (PAL)			BM (PAL-M)		
Ref						
C1	10P	0.5P	50V	15P	5%	50V
C2	10P	0.5P	50V	15P	5%	50V
C3	33PF	5%	50V			
C4	47P	5%	50V	39P	5%	50V
C6	68P	5%	50V	56P	5%	50V
C7	33P	5%	50V	39P	5%	50V
C8	6P	0.5P	50V	2P	0.25P	50V
C19	1-102-668-00			1-102-880-00		
	15P	5%	(RH) 50V	15P	5%	(UJ) 50V
C20	68P	5%	(UJ) 50V	56P	5%	(UJ) 50V
C23	ELECT			FILM		
	1	20%	50V	0.01	5%	50V
C26	160P	1%	500V	130P	1%	500V
C30	160P	1%	500V	130P	1%	500V
C62	24P	5%	50V			JW
C80				1	20%	50V
C304	10P	0.5P	50V			
C316	2P	0.25P	50V	10P	0.5P	50V
C350	33P	5%	(UJ) 50V	22P	5%	(UJ) 50V
D15				1SS119		
L3	33μH			68μH		
R4	1.5K	1%	1/6W	1K	1%	1/6W
R5	82	1%	1/6W	110	1%	1/6W
R8	1.2K	1%	1/6W	1.8K	1%	1/6W
R11	56	1%	1/6W	130	1%	1/6W
R12	1.8K	1%	1/6W	2.2K	1%	1/6W
R23	6.8K	1%	1/6W	5.6K	1%	1/6W
R28	1.8K	5%	1/4W	3.3K	5%	1/4W
R34	270	1%	1/6W	680	1%	1/6W
R35	270	1%	1/6W	680	1%	1/6W
R40	1K	1%	1/6W	1K	5%	1/4W
R41	2.2K	1%	1/6W	2.2K	5%	1/6W
R42	10K	1%	1/6W	10K	5%	1/4W
R43	1K	1%	1/6W	1K	5%	1/4W
R55	750	1%	1/6W	910	1%	1/6W
R60	750	1%	1/6W	910	1%	1/6W
R64	220K	1%	1/6W	1K	5%	1/4W
R65	3.9K	1%	1/6W	2.2K	1%	1/6W
R115	5.1K	1%	1/6W	2.2K	1%	1/6W
R116	5.1K	1%	1/6W	2.2K	1%	1/6W
R130	220K	1%	1/6W	470K	1%	1/6W
R309	10	5%	1/4W			
R320	130K	1%	1/6W	360K	1%	1/6W
TH1				THERMISTOR	10K	
X1		4.43MHz			3.58MHz	
X2		10.64MHz			10.717MHz	
C113	ELECT					
	33	20%	16V			
R25	6.8K	5%	1/4W	4.7K	5%	1/4W
R26	680	5%	1/4W	1.2K	5%	1/4W
R39	1.5K	1%	1/6W	2.2K	1%	1/6W
C18	12PF	5%	50W	15PF	5%	50V



# BD or BM BD or BM

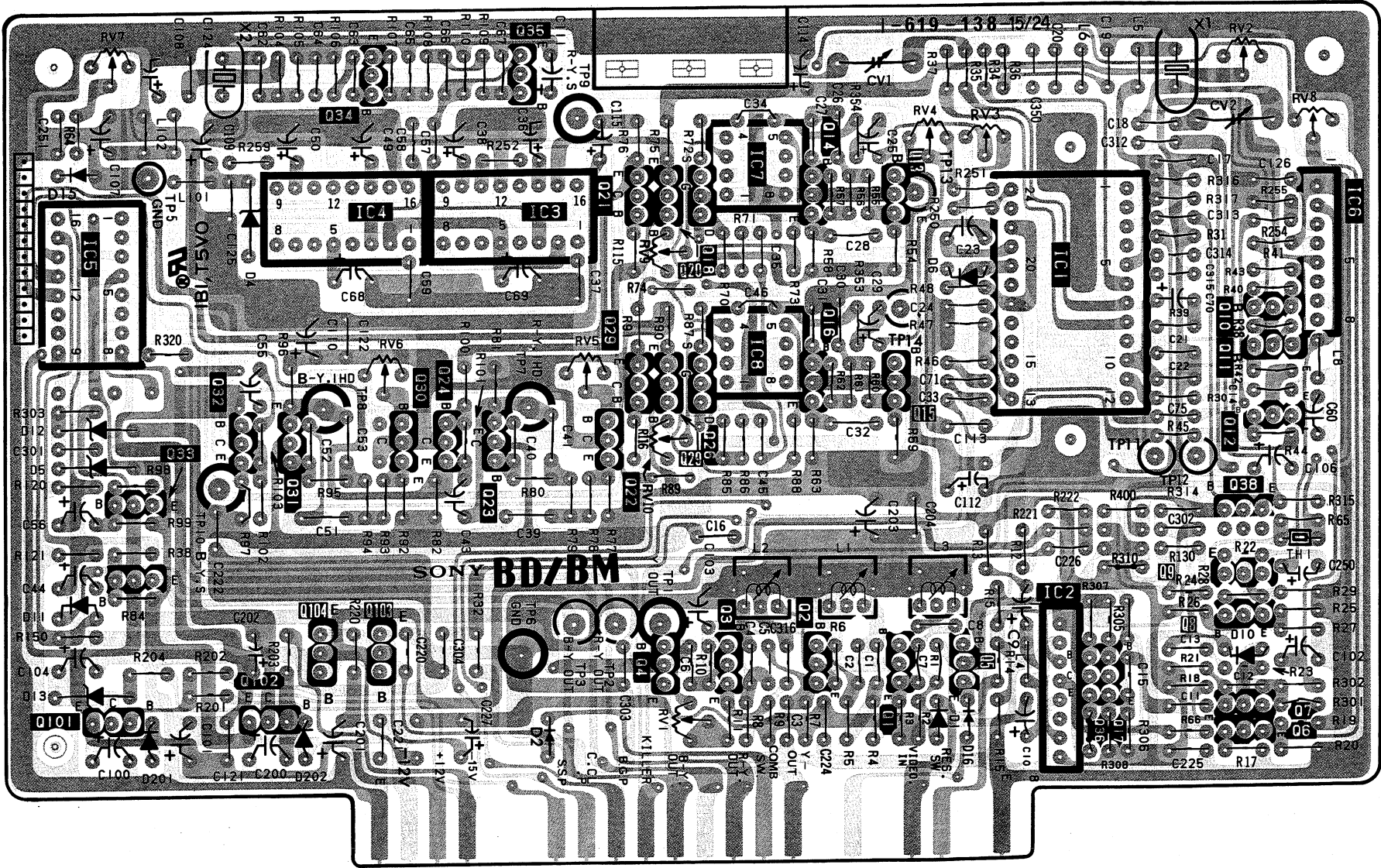
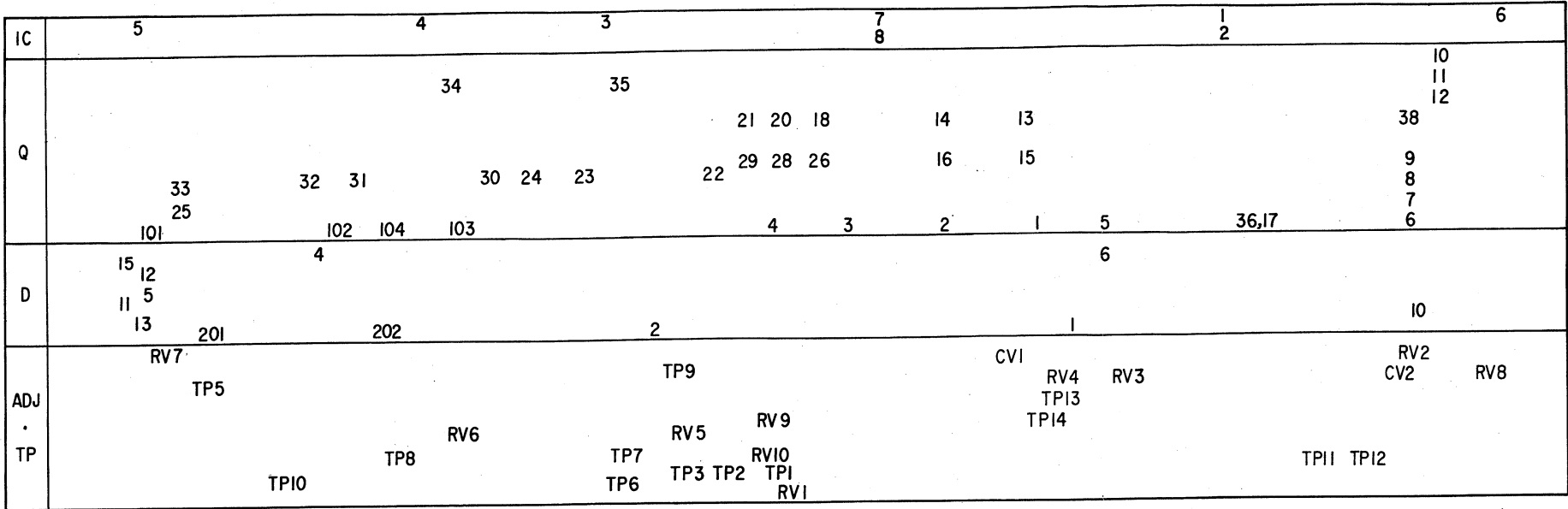
BD board (PAL DECODER Y.TRAP) (BVM-1415P ONLY)  
BM board (PAL-M DECODER Y.TRAP) (BVM-1415PM ONLY)



BD or BM

BD or BM

BD board (PAL DECODER Y. TRAP) 1-619-138-15 (BVM-1415P ONLY)  
 BM board (PAL-M DECODER Y. TRAP) 1-619-138-24 (BVM-1415PM ONLY)



IC1	TA7193P	PAL DEMODULATOR
2	LA7016	RESIDUAL SWITCH
3	TL8608P	1H DELAY LINE
4	TL8608P	1H DELAY LINE
5	TC4053BP	ANALOG SWITCHER
6	LA7016	BURST GATE
7	UPC4558C	R-Y CLAMP
8	UPC4558C	B-Y CLAMP
Q1	2SC403SP	BUFFER
2	2SC403SP	ACTIVE FILTER
3	2SC403SP	Y-DELAY CORRECTOR
4	2SC3068	BUFFER
5	2SC3068	BUFFER
6	2SA844	PHASE CONTROLLER
7	2SC2668	PHASE CONTROLLER
8	2SA844	PHASE CONT. AMP.
9	2SC2668	PHASE CONT. AMP.
10	2SA844	APL FILTER
11	2SA844	APL FILTER
12	2SC2668	APL FILTER SWITCH
13	2SC403SP	R-Y L.P.F
14	2SC403SP	R-Y L.P.F
15	2SC403SP	B-Y L.P.F
16	2SC403SP	B-Y L.P.F
17	2SC2668	AMPLIFIER
18	2SK381	R-Y CLAMP
20	2SA844	BUFFER
21	2SC2668	BUFFER
22	2SC403SP	CCD OUT L.P.F
23	2SA844	CCD OUT L.P.F
24	2SC2668	BUFFER
25	2SC3068	BUFFER
26	2SK381	B-Y CLAMP
28	2SA844	BUFFER
29	2SC2668	BUFFER
30	2SC403SP	CCD OUT L.P.F
31	2SA844	CCD OUT L.P.F
32	2SC2668	BUFFER
33	2SC3068	BUFFER
34	2SC2668	CCD CLOCK GEN
35	2SC2668	CCD CLOCK GEN
36	2SC2668	BUFFER
38	2SC2668	BUFFER
101	2SB734	SYSTEM SWITCH
102	2SD774	SYSTEM SWITCH
103	DTA124ES	COMB. SWITCH
104	DTA124ES	COMB. SWITCH
D1	1SS119	SYSTEM SWITCH
2	1SS119	COMB. SWITCH
4	RD3.0EN2	CCD BIAS
5	RD9.1EB	SWITCH BIAS
6	1SS119	KILLER SWITCH
10	1T25	PHASE CONTROL
11	1SS119	PAL S/D SWITCH
12	RD12EB2	PHASE SWITCH
13	RD12EB2	SYSTEM SWITCH
16	1SS119	COMB SW
201	1SS119	PROTECTOR
202	1SS119	PROTECTOR

- Conductor side pattern
- Component side pattern

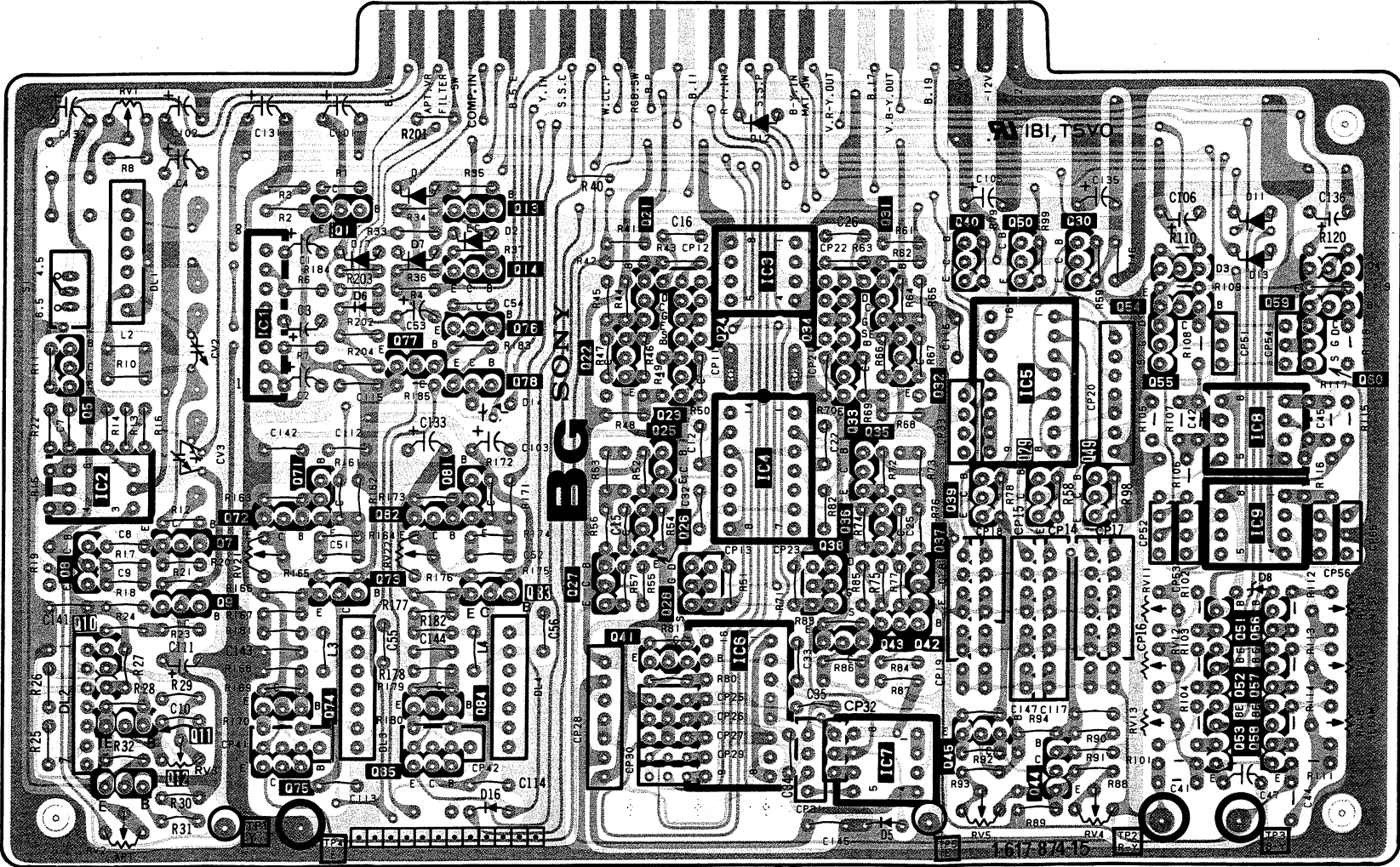


BG

BG

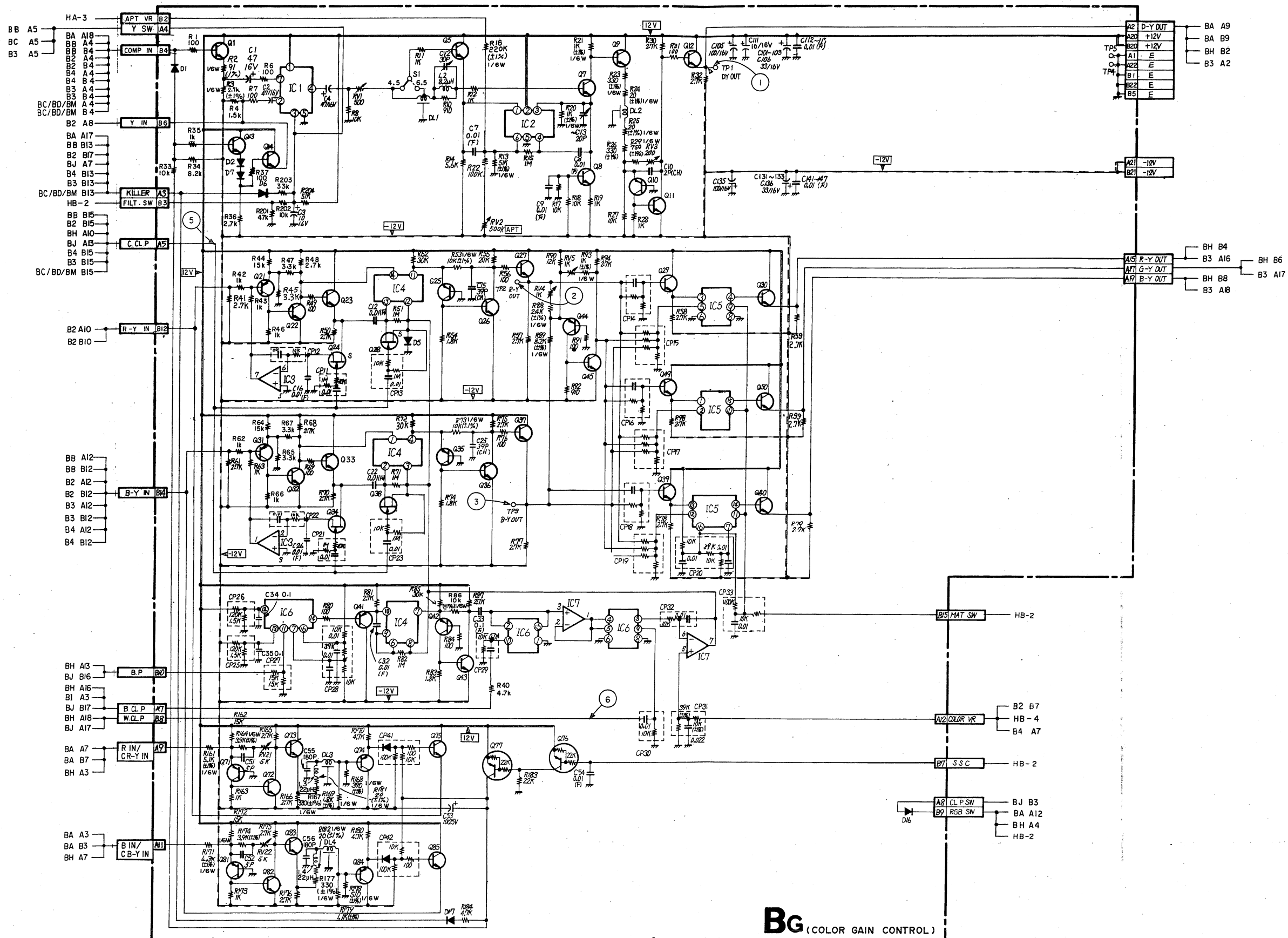
BG board (COLOR GAIN CONTROL, COMPONENT R-Y AMP & DELAY, APERTURE CONTROL,  
Y DELAY, VECTOR OUT, NTSC MATRIX SW, G-Y MATRIX AMP)

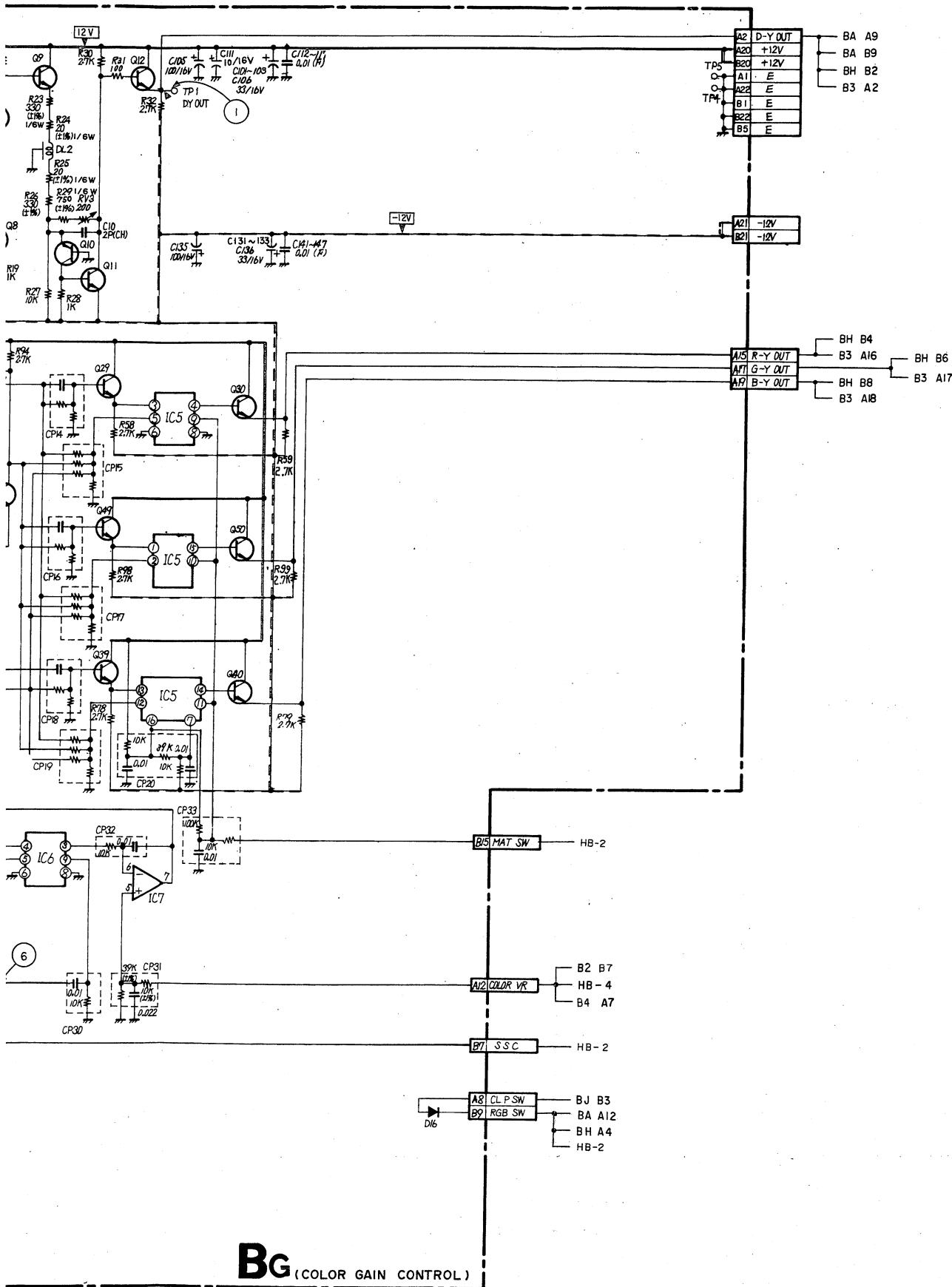
IC	<div> <div>1</div> <div>3</div> <div>5</div> </div>														
	<div> <div>6</div> <div>4</div> <div>7</div> </div>														
Q	<div> <div>1</div> <div>13</div> <div>40</div> <div>50</div> <div>30</div> </div>														
	<div> <div>5</div> <div>8</div> <div>10</div> <div>11</div> <div>12</div> </div>														
D	<div> <div>17</div> <div>7</div> <div>12</div> <div>3</div> <div>11</div> <div>13</div> <div>4</div> </div>														
TP	<div> <div>RV1</div> <div>CV2</div> <div>CV3</div> <div>RV3</div> <div>RV21</div> <div>RV2</div> <div>TP1</div> <div>TP4</div> <div>RV22</div> <div>TP5</div> <div>RV5</div> <div>RV4</div> <div>TP2</div> <div>TP3</div> <div>RV11</div> <div>RV12</div> <div>RV13</div> <div>RV14</div> <div>RV15</div> <div>RV16</div> </div>														
ADJ															



- Conductor side pattern
- Component side pattern

**BG board (COLOR GAIN CONTROL, COMPONENT R-Y AMP & DELAY, APERTURE CONTROL, Y DELAY, NTSC MATRIX SW, G-Y MATRIX AMP)**

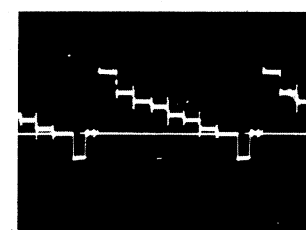




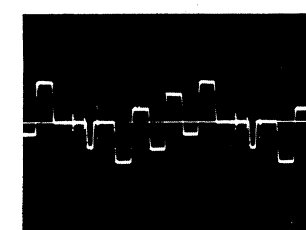
BG BOARD

IC1	LA7016	FILTER SW
2	TX-429M	APERTURE
3	NJM4558D	COLOR DIFFERENCE CLAMP
4	CX-718D	CHROMA CONTROL
5	UPD4053BC	MATRIX SW
6	UPD4053BC	CHROMA CONTROL
7	TL082CP	CHROMA CONTROL
Q1	2SC403SP	BUFF
5	2SC403SP	APERTURE
7	2SC403SP	APERTURE
8	2SC403SP	APERTURE
9	2SC403SP	Y DELAY
10	2SA844	Y AMP
11	2SC403SP	Y AMP
12	2SC403SP	Y AMP
13	2SC403SP	BUFF
14	2SC3068	BUFF
21	2SA844	R-Y AMP
22	2SC403SP	R-Y AMP
23	2SC403SP	R-Y CLAMP
24	2SK381	R-Y CLAMP
25	2SA844	R-Y CHROMA CONTROL
26	2SC403SP	R-Y CHROMA CONTROL
27	2SC403SP	R-Y CHROMA CONTROL
28	2SK381	R-Y CHROMA CONTROL
29	2SC403SP	R-Y BUFF
30	2SC403SP	R-Y BUFF
31	2SA844	B-Y AMP
32	2SC403SP	B-Y AMP
33	2SC403SP	B-Y CLAMP
34	2SK381	B-Y CLAMP
35	2SA844	B-Y CHROMA CONTROL
36	2SC403SP	B-Y CHROMA CONTROL
37	2SC403SP	B-Y CHROMA CONTROL
38	2SK381	B-Y CHROMA CONTROL
39	2SC403SP	B-Y BUFF
40	2SC403SP	B-Y BUFF
41	2SA844	CHROMA CONTROL
42	2SA844	CHROMA CONTROL
43	2SC403SP	CHROMA CONTROL

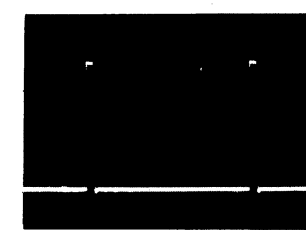
Q44	2SA844	CHROMA CONTROL
45	2SC403SP	CHROMA CONTROL
49	2SC403SP	G-Y BUFF
50	2SC403SP	G-Y BUFF
71	2SA844	R-Y AMP
72	2SC403SP	R-Y AMP
73	2SC403SP	R-Y AMP
74	2SA844	R-Y DELAY
75	2SC3068	R-Y BUFF
76	DTA124ES	COMPONENT SW
77	DTA124ES	COMPONENT SW
81	2SA844	B-Y AMP
82	2SC403SP	B-Y AMP
83	2SC403SP	B-Y AMP
84	2SA844	B-Y DELAY
85	2SC3068	B-Y BUFF
D1	1SS119	COMPONENT SW
2	1SS119	DC SHIFT SW
5	1SS119	PROTECT
6	1SS119	DC SHIFT
7	1SS119	FILTER SW
16	1SS119	R.G.B. SW
17	1SS119	KILLER



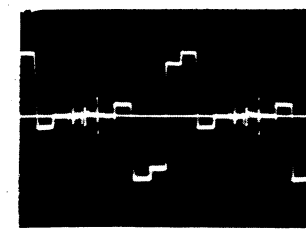
① 1.0Vp-p (H)



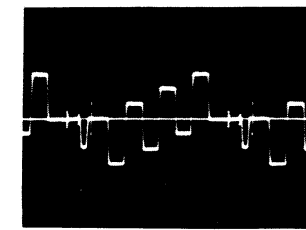
③ 1.7Vp-p (H)



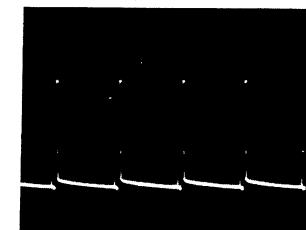
⑤ 4.8Vp-p (H)



② 1.4Vp-p (H)



④ 0.9Vp-p (H)

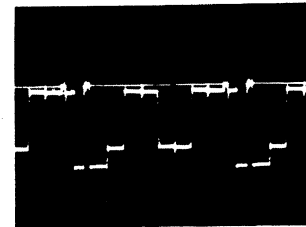


⑥ 12Vp-p (H)

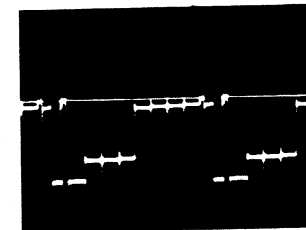
## BH BOARD

IC1(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP & CROSS HATCH SW
(3/3)		SCREENING SW
2(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
3(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
4(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
5	NJM4558S	SAMPLE HOLD
6	NJM4558S	SAMPLE HOLD
7	LA7016	BLUE ONLY SW
8	LA7016	BLUE ONLY SW
9	uPd4053BC	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
10(1/2)	uPd4053BC	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
(2/2)		COLOR DIFFERENCE & R.G.B. SCREENING PULSE GEN
11(1/4)		AGC PULSE, SET UP, WHITE, VITC INSERT GEN
(3/4)		COLOR DIFFERENCE & R.G.B. SCREENING PULSE GEN
(2/4)	uPd4081BC	Y SCREENING PULSE GEN
(4/4)		AGC PULSE, SET UP, WHITE, VITC INSERT GEN
12	uPd4081BC	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
13	FPD4001BC	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
14	TC4030BP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
101	TX-429M	R CONTRAST CONTROL
102	TL082CP	R CONTRAST & BRIGHT CONTROL
201	TX-429M	G CONTRAST CONTROL
202	TL082CP	G CONTRAST & BRIGHT CONTROL
301	TX-429M	B CONTRAST CONTROL
302	TL082CP	B CONTRAST & BRIGHT CONTROL
Q1	2SK403SP	Y BUFF
2	2SK523	Y SAMPLE HOLD
3	2SA844	Y BUFF
4	2SK403SP	R-Y/R BUFF

Q5	2SK523	R-Y/Y SAMPLE HOLD
6	2SA844	R-Y/R BUFF
7	2SK403SP	G-Y/R BUFF
8	2SK523	G-Y/Y SAMPLE HOLD
9	2SA844	G-Y/G BUFF
10	2SK403SP	B-Y/B BUFF
11	2SK523	B-Y/Y SAMPLE HOLD
12	2SA844	B-Y/B BUFF
13	2SA844	R BUFF
14	2SA844	G BUFF
15	2SA844	B BUFF
16	2SC3068	AGC PULSE BUFF
101	2SK381	R CONTRAST CONTROL
102	2SA844	R AMP
103	2SC403SP	R AMP
104	2SC403SP	R LIMITER
105	2SC403SP	R LIMITER
106	2SK381	R BRIGHT CONTROL
107	2SK381	R CONTRAST CONTROL
108	2SK381	R CONTRAST CONTROL
201	2SK381	G CONTRAST CONTROL
202	2SA844	G AMP
203	2SC403SP	G AMP
204	2SC403SP	G LIMITER
205	2SC403SP	G LIMITER
206	2SK381	G BRIGHT CONTROL
207	2SK381	G CONTRAST CONTROL
208	2SK381	G CONTRAST CONTROL
301	2SK381	B CONTRAST CONTROL
302	2SA844	B AMP
303	2SC403SP	B AMP
304	2SC403SP	B LIMITER
305	2SC403SP	B LIMITER
306	2SK381	B BRIGHT CONTROL
307	2SK381	B CONTRAST CONTROL
308	2SK381	B CONTRAST CONTROL
D1	1SS119	
101	1SS119	R LIMITER
102	1SS119	R PROTECT
201	1SS119	G LIMITER
202	1SS119	G PROTECT
301	1SS119	B LIMITER
302	1SS119	B PROTECT



① 0.7Vp-p (H)

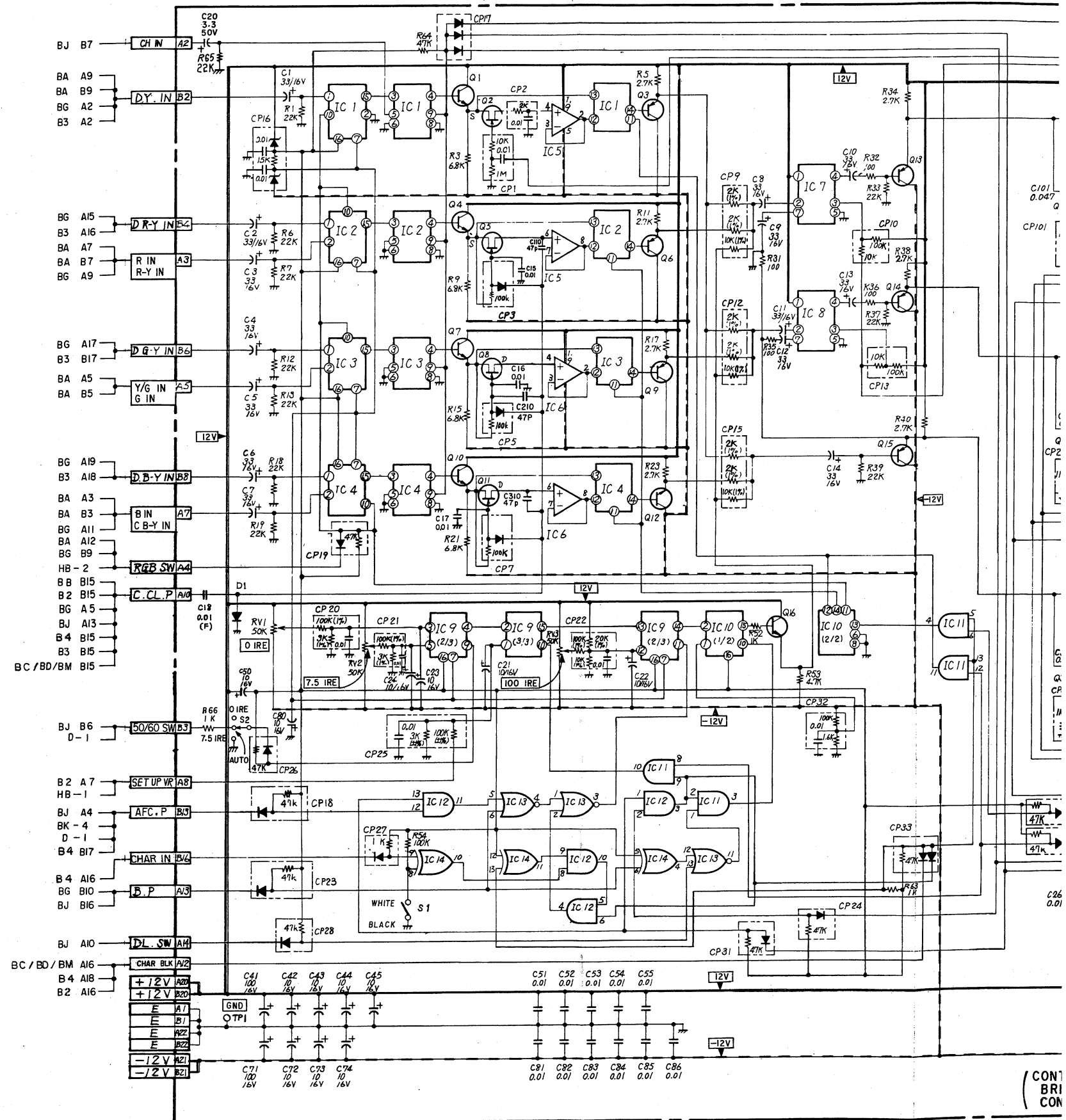


② 0.7Vp-p (H)



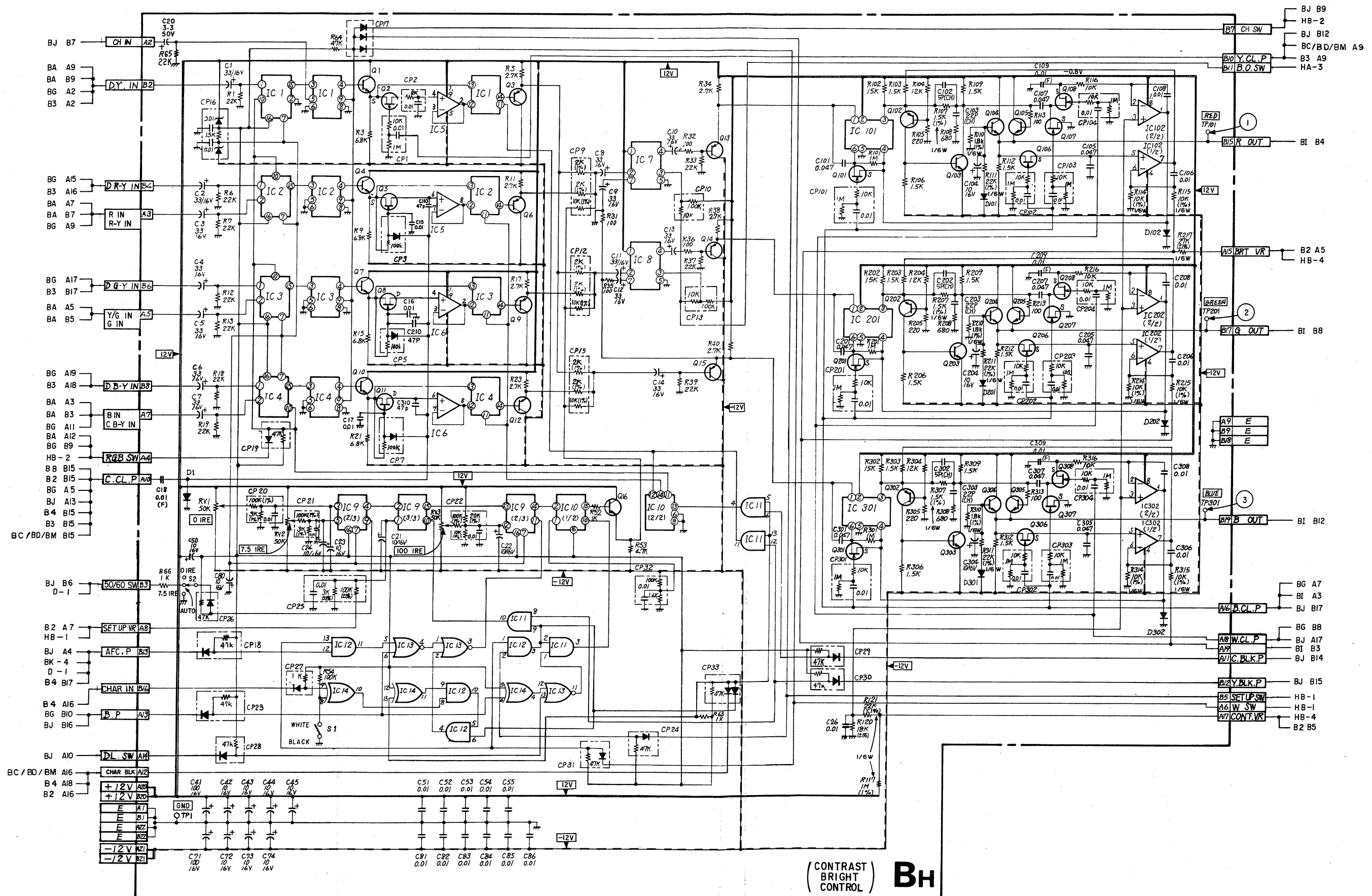
③ 0.7Vp-p (H)

## BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)



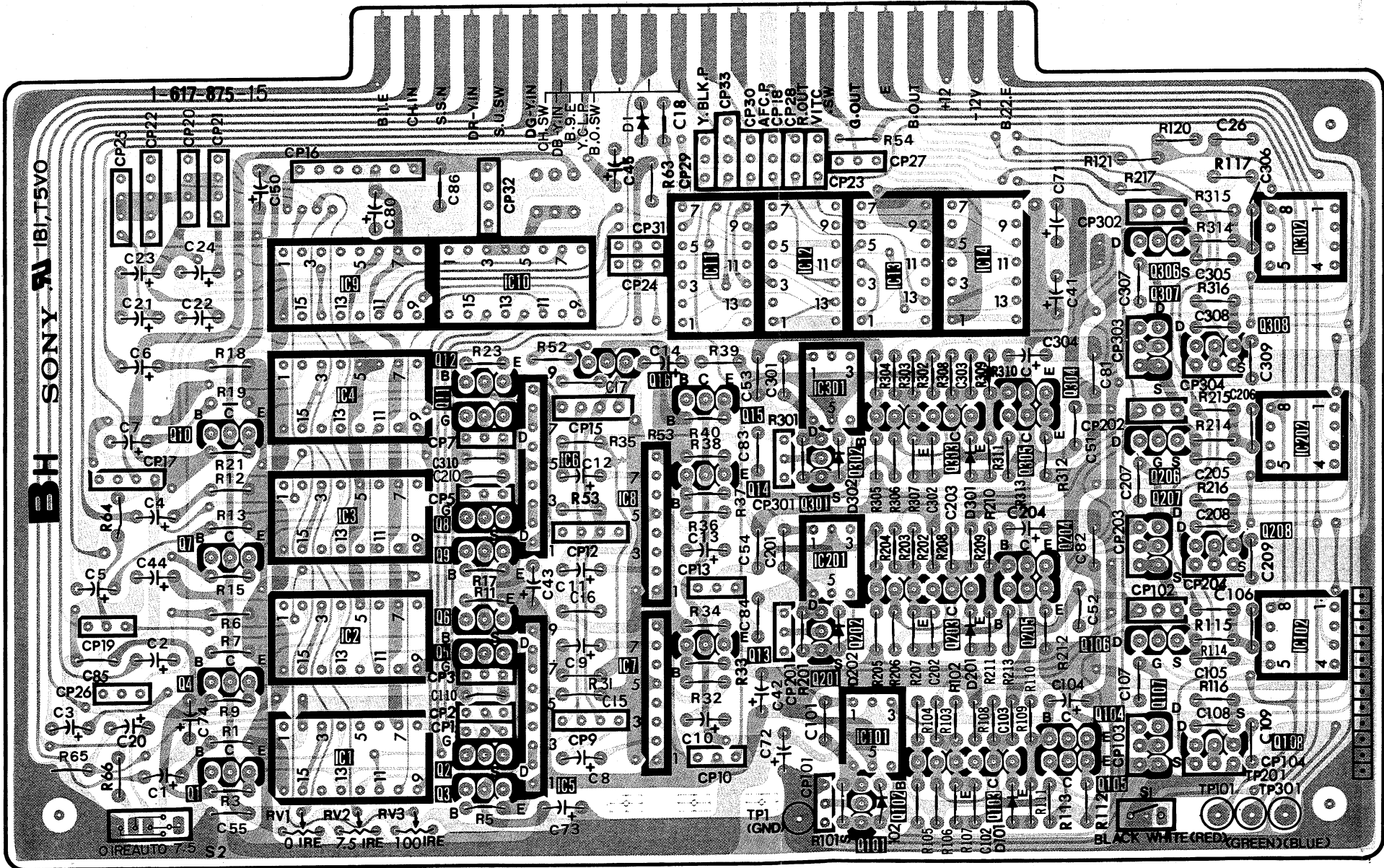


**BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)**



BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)

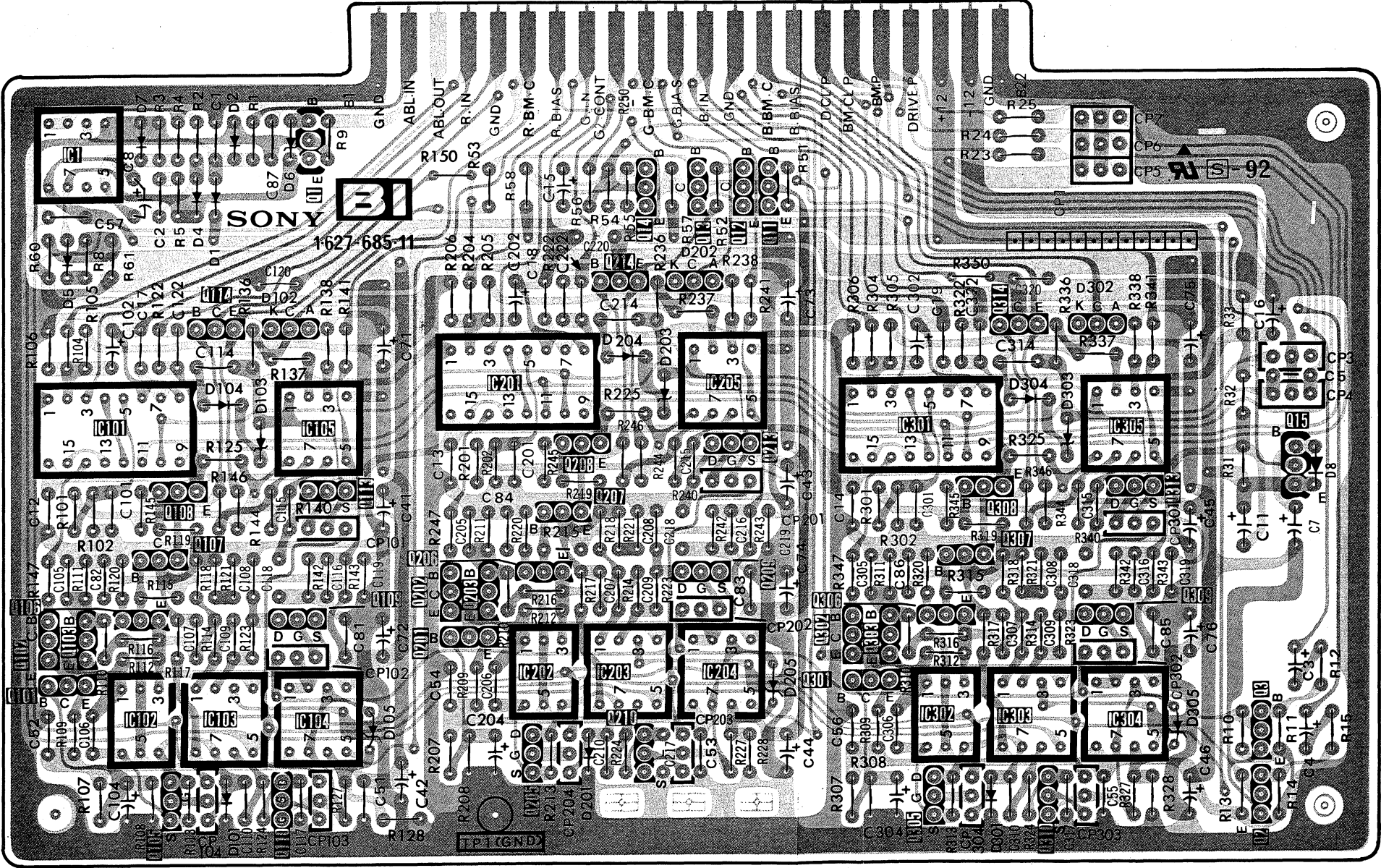
IC		9 4 3 2 1		10 6 5		11 8 7		12 301 201 101	13		14				202
Q		10 7 4 1		12 11 8 9 6 5 2 3		16 15 14 13			302 303 202 203 102		304 305 204 205 104 105		306 307 206 207 106 107	308 208	108
D						1		302 202 102		301 201 101					
TP ADJ			RV1  RV2  RV3				TP1						TP201 TP101  TP301		



● : Conductor side pattern  
● : Component side pattern

BI board (DRIVE CONTROL, BEAM CURRENT CONTROL)

IC	I																					
	101			105			201			205			301			305						
	102		103	104	202			203	204		302		303	304								
Q	I																					
	102		103	106	108	114	109		202	203	206	207	208	209	302	303	306	307	308	314	313	15
	101			105		110			201		205	210			301		305		310			3
																						2
D	I																					
	5		7	4	1	2	6	102			202		302			8						
							104	103	204			203	304			303	305					
								105	201			205			301							
TP	I																					



• : Conductor side pattern  
• : Component side pattern

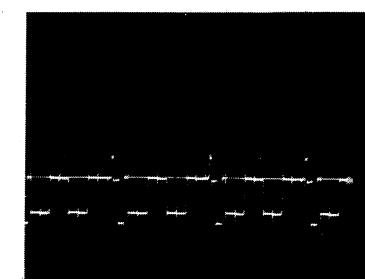


BI BOARD

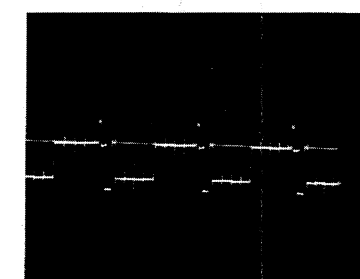
IC1	NJM4558D	ABL
101(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
102	TX-429M	GAIN CONTROL
103(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
104	TL082CP	AMP
105(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
201(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
202	TX-429M	GAIN CONTROL
203(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
204	TL082CP	AMP
205(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
301(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
302	TX-429M	GAIN CONTROL
303(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
304	TL082CP	AMP
305(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
Q1	DTC143TS	OVER LOAD LED DRIVE
2	2SC403SP	PULSE SHAPING
3	2SC403SP	PULSE SHAPING
11	2SC2878	G2 CONTROL
12	2SC2878	G2 CONTROL
13	2SC2878	G2 CONTROL
14	2SC2878	G2 CONTROL
15	DTA144ES	G2 CONTROL
101	2SA844	LIMITER
102	2SA844	LIMITER
103	2SA844	LIMITER
105	2SK381	GAIN CONTROL
106	2SA844	AMP
107	2SC2668	AMP
108	2SA844	AMP
109	2SK381	SAMPLE-HOLD

Q110	2SK381	SAMPLE-HOLD
113	2SK381	SAMPLING
114	2SA1091	CLAMP BIAS CONTROL
201	2SA844	LIMITER
202	2SA844	LIMITER
203	2SA844	LIMITER
205	2SK381	GAIN CONTROL
206	2SA844	AMP
207	2SC2668	AMP
208	2SA844	AMP
209	2SK381	SAMPLE-HOLD
210	2SK381	SAMPLE-HOLD
213	2SK381	SAMPLING
214	2SA1091	CLAMP BIAS CONTROL
301	2SA844	LIMITER
302	2SA844	LIMITER
303	2SA844	LIMITER
305	2SK381	GAIN CONTROL
306	2SA844	AMP
307	2SC2668	AMP
308	2SA844	AMP
309	2SK381	SAMPLE-HOLD
310	2SK381	SAMPLE-HOLD
313	2SK381	SAMPLING
314	2SA1091	CLAMP BIAS CONTROL
D1	1SS119	PROTECTOR
2	1SS119	PROTECTOR
4	1SS119	ABL
5	1SS119	ABL
6	RD12ESB2	OVER LOAD LED DRIVE
7	1SS119	ABL
8	1SS119	G2 CONTROL
101	1SS119	PROTECTOR
102	MC931	PROTECTOR
103	RD4.3ES-T1B	LIMITER
104	1SS119	LIMITER
201	1SS119	PROTECTOR
202	MC931	PROTECTOR
203	RD4.3ES-T1B	LIMITER
204	1SS119	LIMITER
301	1SS119	PROTECTOR
302	MC931	PROTECTOR
303	RD4.3ES-T1B	LIMITER
304	1SS119	LIMITER
105	RD6.2ESB	
205	RD6.2ESB	
305	RD6.3ESB	

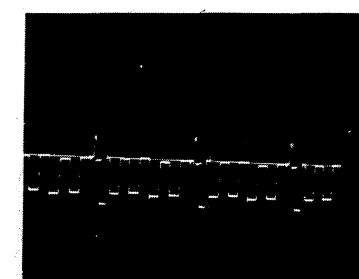
5. DIAGRAMS



① 1.2 Vp-p(H)

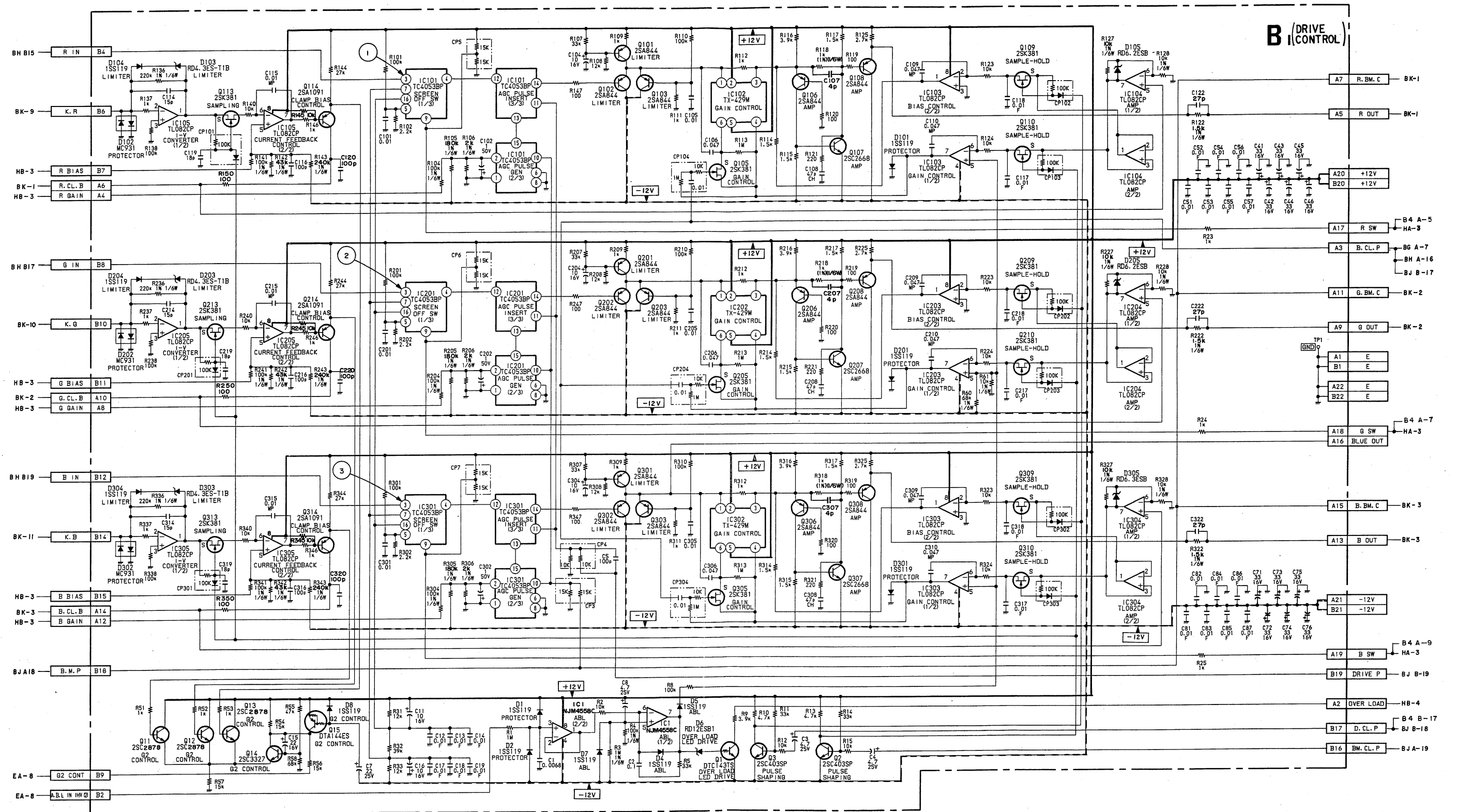


② 1.2 Vp-p(H)



③ 1.2 Vp-p(H)

BI board (DRIVE CONTROL, BEAM CURRENT CONTROL)

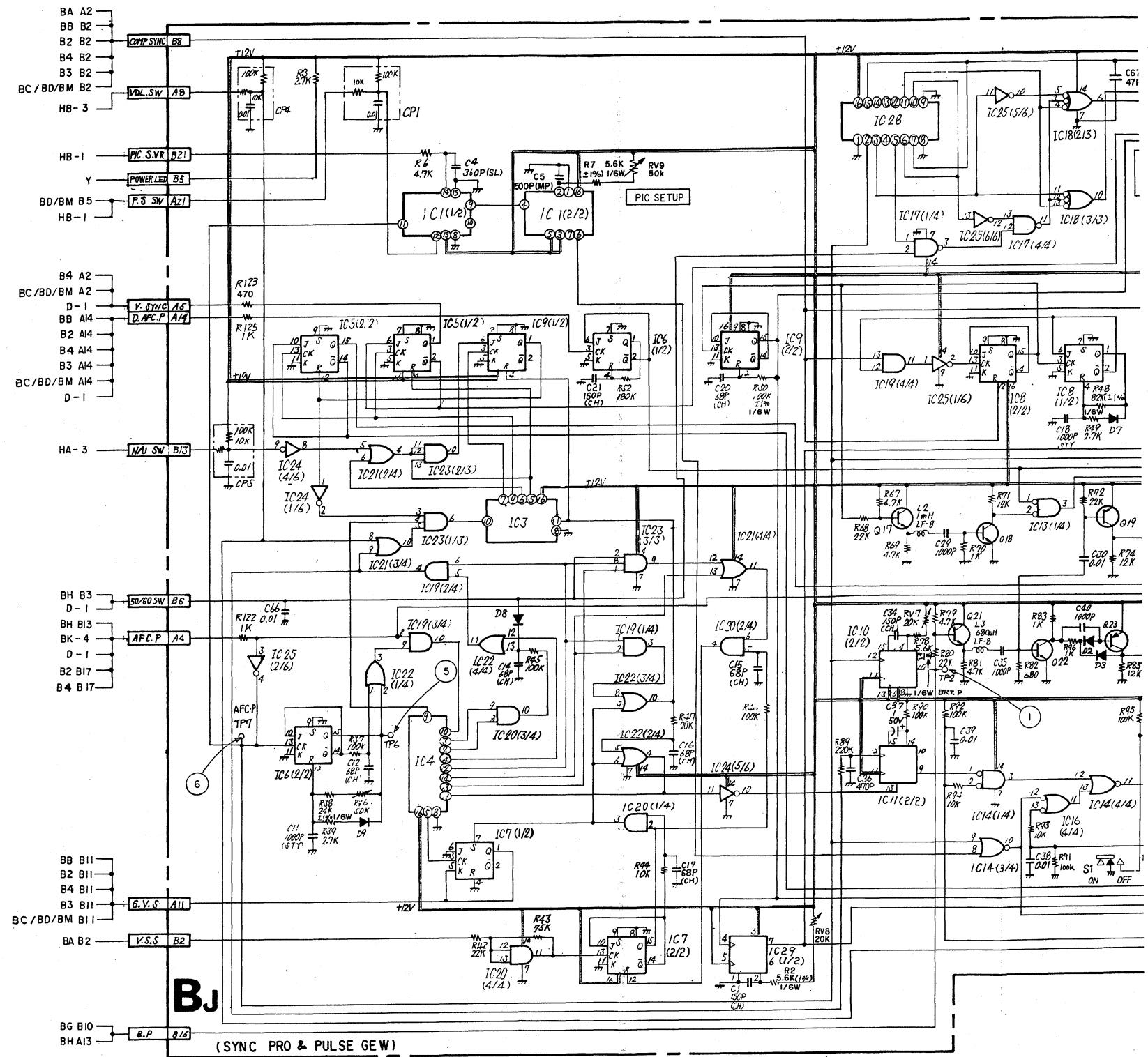


## BJ BOARD

IC1	HD14538BP	PIC.SET.PULSE GEN
2	UPD4001BC	CROSS HATCH GEN
3	TC4040BP	V SYNC & DELAY
4	TC4040BP	V COUNT
5	TC504027BP	V SYNC & DELAY
6(1/2)	TC504027BP	CHROMA CLAMP PULSE GEN
(2/2)	TC504027BP	2FH MULTI
7	TC504027BP	V COUNT
8	TC504027BP	1H PULSE PROCESS
9(1/2)	TC504027BP	V SYNC & DELAY
(2/2)	TC504027BP	1H PULSE PROCESS
10(1/2)	HD14538BP	B.G.P GEN 2
(2/2)	HD14538BP	H CYCLE
11(1/2)	HD14538BP	CROSS HATCH GEN
(2/2)	HD14538BP	SPLIT Y BLK, C BLK PULSE GEN
12	HD14538BP	Y CYCLE AGC & CLAMP PULSE GEN
13(1/4)	UPD4001BC	CHROMA CLAMP PULSE GEN
(2/4)	UPD4001BC	Y.CL.P GEN
(3/4)	UPD4001BC	B.G.P GEN 2
(4/4)	UPD4001BC	RESIDUAL PULSE GEN
14(1/4)	UPD4001BC	SPLIT Y BLK: C BLK PULSE GEN
(3/4)	UPD4001BC	V CYCLY AGC & CLAMP PULSE GEN
(4/4)	UPD4001BC	V CYCLE AGC & CLAMP PULSE GEN
15	UPD4071BP	CROSS HATCH GEN
16(1/4)	HD14011BP	Y CYCLE AGC & CLAMP PULSE GEN
(2/4)	HD14011BP	H OR V BLK, P
(3/4)	HD14011BP	SPLIT Y BLK, C BLK PULSE GEN
(4/4)	HD14011BP	CROSS HATCH GEN
17	HD14011BP	CROSS HATCH GEN
18	TC4023BP	CROSS HATCH GEN
19(1/4)	UPD4081BC	V COUNT
(2/4)	UPD4081BC	V SYNC & DELAY
(3/4)	UPD4081BC	2FH MULTI
(4/4)	UPD4081BC	1H PULSE PROCESS
20	UPD4081BC	V COUNT
21(1/4)	UPD4071BP	V CYCLE AGC & CLAMP PULSE GEN
(2/4)	UPD4071BP	V SYNC & DELAY
(3/4)	UPD4071BP	V COUNT
(4/4)	UPD4071BP	V SYNC & DELAY
22(1/4)	UPD4071BP	V COUNT
(2/4)	UPD4071BP	V COUNT
(3/4)	UPD4071BP	V COUNT
(4/4)	UPD4071BP	V COUNT

IC23(1/3)	TC4073BP	V SYNC & DELAY
(2/3)	TC4073BP	V COUNT
(3/3)	TC4073BP	V COUNT
24(1/5)	UPD4069UBC	V SYNC & DELAY
(4/5)	UPD4069UBC	CROSS HATCH GEN
(2/5)	UPD4069UBC	V COUNT
(3/5)	UPD4069UBC	1H PULSE PROCESS
(5/5)	UPD4069UBC	INV
25(1/6)	UPD4069UBC	H OR V BLK.P
(2/6)	UPD4069UBC	Y CYCLE AGC & CLAMP PULSE GEN
(3/6)	UPD4069UBC	CROSS HATCH GEN
(4/6)	UPD4069UBC	CROSS HATCH GEN
(5/6)	UPD4069UBC	CROSS HATCH GEN
(6/6)	UPD4069UBC	CROSS HATCH GEN
26	TC40175BP	1H PULSE PROCESS
27(1/3)	UPD4053BC	CLAMP PULSE CHANGE SW
(2/3)	UPD4053BC	CROSS HATCH GEN
(3/3)	UPD4053BC	H OR V DL SW
28	TC4520BP	CROSS HATCH GEN
29(1/2)	HD14538BP	B.G.P GEN 1
(2/2)	HD14538BP	Y.CL.P GEN
Q14	2SC2785	CROSS HATCH GEN
15	2SC2785	Y.CL.P GEN
16	2SC2785	Y.CL.P GEN
17	2SC2785	CHROMA CLAMP PULSE GEN
18	2SC2785	CHROMA CLAMP PULSE GEN
19	2SA1115	H CYCLE
20	2SC2785	H CYCLE
21	2SC2785	H CYCLE
22	2SC2785	H CYCLE
23	2SA1048	H CYCLE
24	2SC2785	H CYCLE
25	2SC2785	CHROMA CLAMP PULSE GEN
26	2SC2785	Y.CL.P GEN
D1	1SS119	CROSS HATCH GEN
2	1SS119	H CYCLE
3	1SS119	H CYCLE
7	1SS119	1H PULSE PROCESS
8	1SS119	V SYNC & DELAY
9	1SS119	2FH MULTI
11	MC931	PROT

## BJ board (SYNC PROCESSING &amp; PULSE GEN)



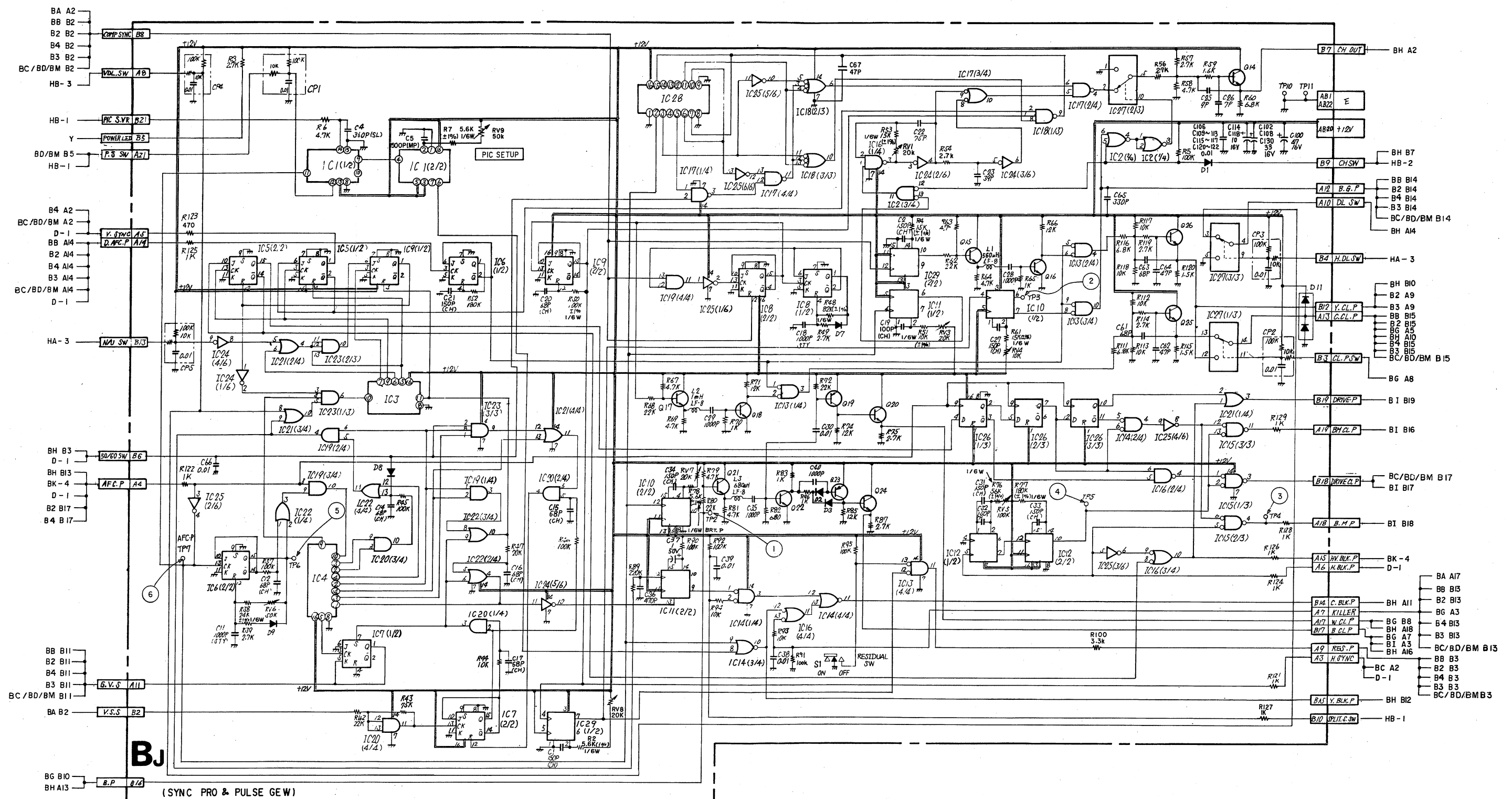
① 12Vp-p (H)  
② 12Vp-p (H)

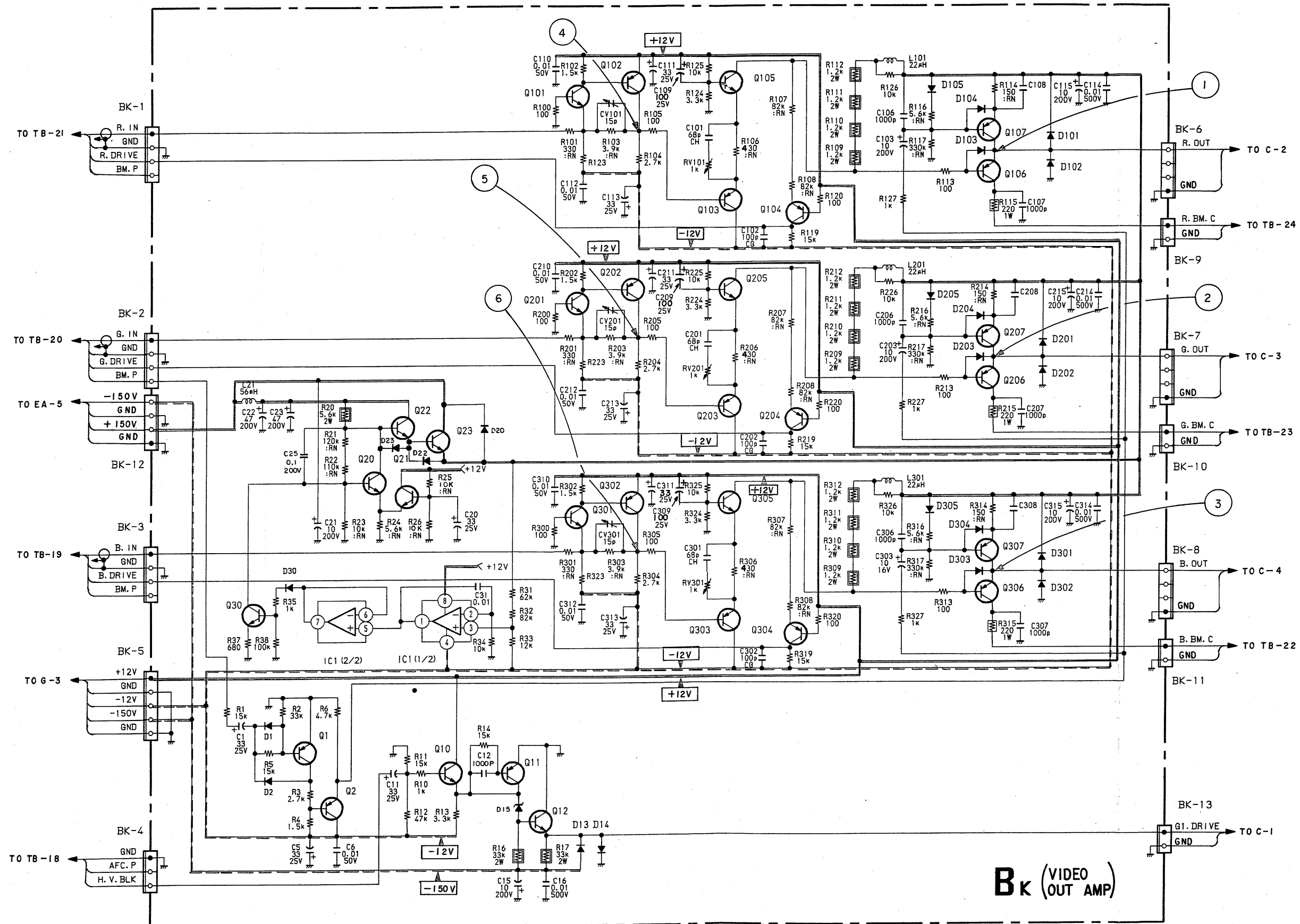
③ 12Vp-p (V)

④ 12Vp-p (H)  
⑤ 12Vp-p (H)

⑥ 12Vp-p (H)

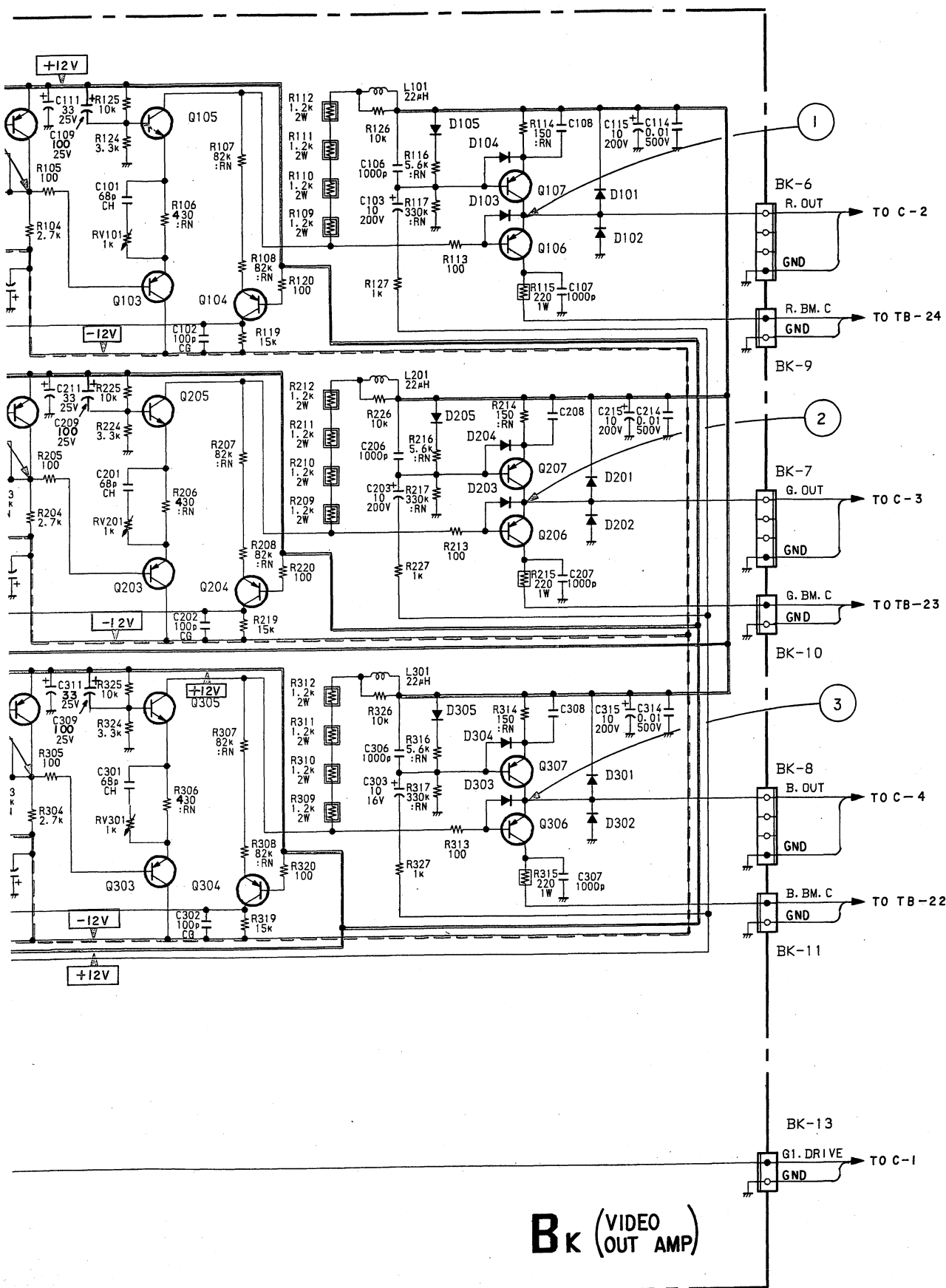
**BJ board (SYNC PROCESSING & PULSE GEN)**





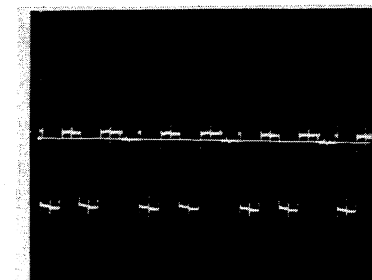
BK (VIDEO OUT AMP)



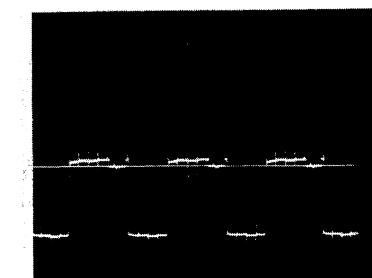


BK BOARD

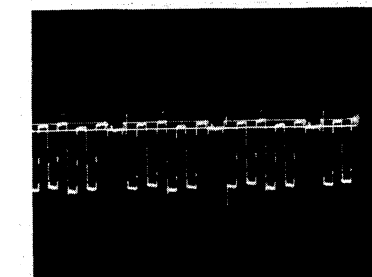
IC1	UPC4558C	LIPPLE FILTER
Q1	2SA1175	INVERTER
2	2SA1175	BUFF.
10	2SC2785	BUFF.
11	2SA1091	BUFF.
12	2SC2551	BUFF.
20	2SC2688	LIPPLE FILTER
21	2SC3068	LIPPLE FILTER
22	2SC2688	LIPPLE FILTER
23	2SD669A	LIPPLE FILTER
30	2SC2688	LIPPLE FILTER
101	2SC2785	R-PRE AMP.
102	2SA1175	R-PRE AMP.
103	2SA844	BUFF.
104	2SA1091	BUFF.
105	2SC3956	BUFF.
106	2SA1142	R-VIDEO OUT
107	2SA1142	R-VIDEO OUT
201	2SC2785	G-PRE AMP.
202	2SA1175	G-PRE AMP.
203	2SA844	BUFF.
204	2SA1091	BUFF.
205	2SC3956	BUFF.
206	2SA1142	G-VIDEO OUT
207	2SA1142	G-VIDEO OUT
301	2SC2785	B-PRE AMP.
302	2SA1175	B-PRE AMP.
303	2SA844	BUFF.
304	2SC3950	BUFF.
305	2SC3956	BUFF.
306	2SA1142	B-VIDEO OUT
307	2SA1142	B-VIDEO OUT
D1	1SS133	INVERTER
2	1SS133	INVERTER
12	1SS83	
13	1SS83	BIAS
14	1SS83	PROTECTOR
30	1SS133	
101	1SS83	PROTECTOR
102	1SS83	PROTECTOR
103	1SS133	PROTECTOR
104	1SS133	PROTECTOR
105	1SS133	BIAS
201	1SS83	PROTECTOR
202	1SS83	PROTECTOR
203	1SS133	PROTECTOR
204	1SS133	PROTECTOR
205	1SS133	BIAS
301	1SS83	PROTECTOR
302	1SS83	PROTECTOR
303	1SS133	PROTECTOR
304	1SS133	PROTECTOR
305	1SS133	BIAS
15	RD20ES-TB	
20	ISS133	
22	ISS133	
23	ISS133	



① 30 Vp-p(H)  
④ 3 Vp-p(H)



② 35 Vp-p(H)  
⑤ 3.5 Vp-p(H)

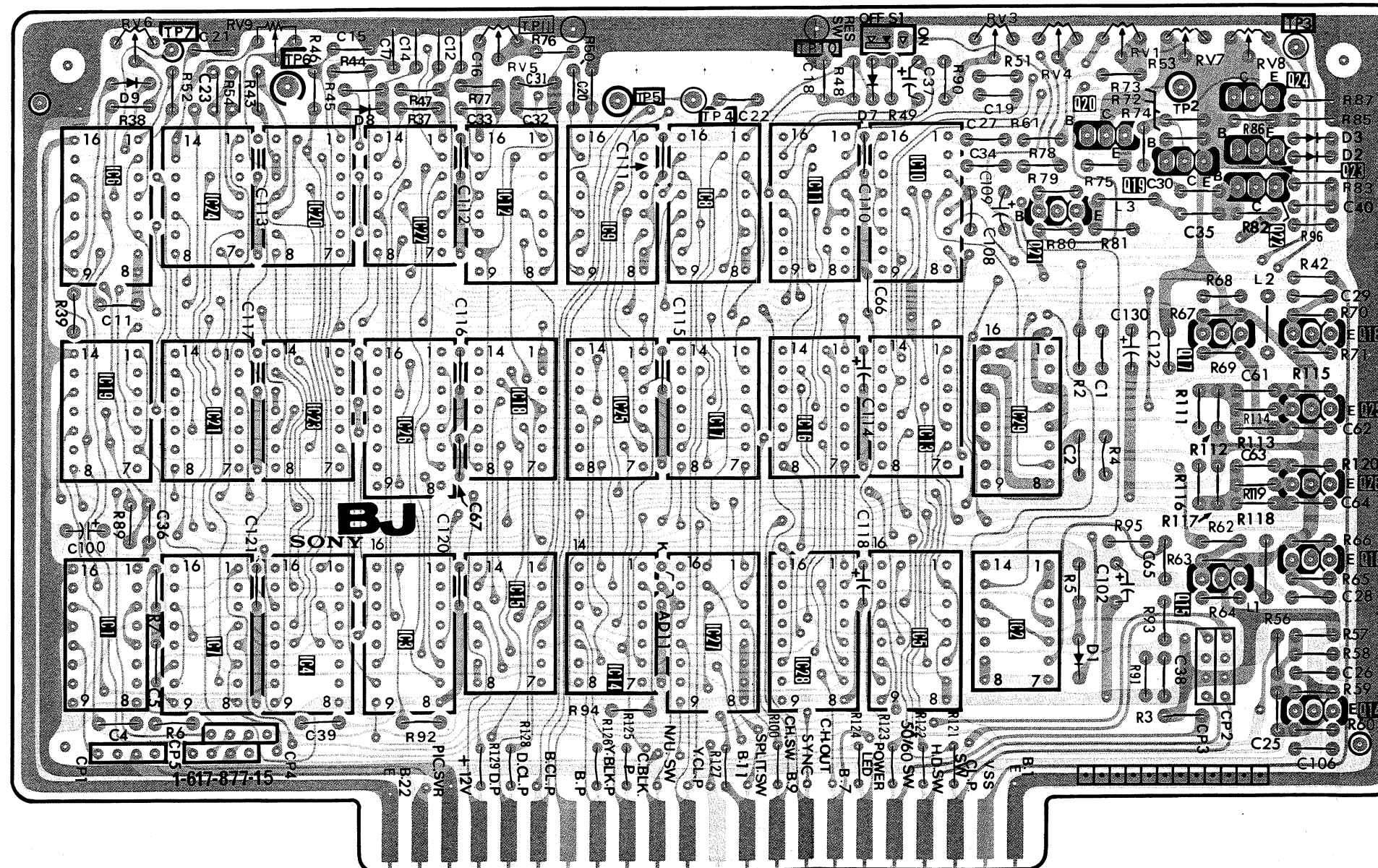




③ 30 Vp-p(H)  
⑥ 3 Vp-p(H)

**BJ BJ**

**BJ board (SYNC PROCESSING & PULSE GEN)**

IC	6 19 1	24 21 7	20 23 4	22 26 3	12 18 15	9 25 14	8 17 27	11 16 28	10 13 5	29 2					
Q											20	19	24 23 22	18 25 26 16 14	
D	9	8			7					3 2					
TP ADJ	RV6 TP7		RV9 TP6	RV5		TP11 TP5	11 TP4	TP10	RV3		RV4	RV1	RV7 TP2	RV8	TP3

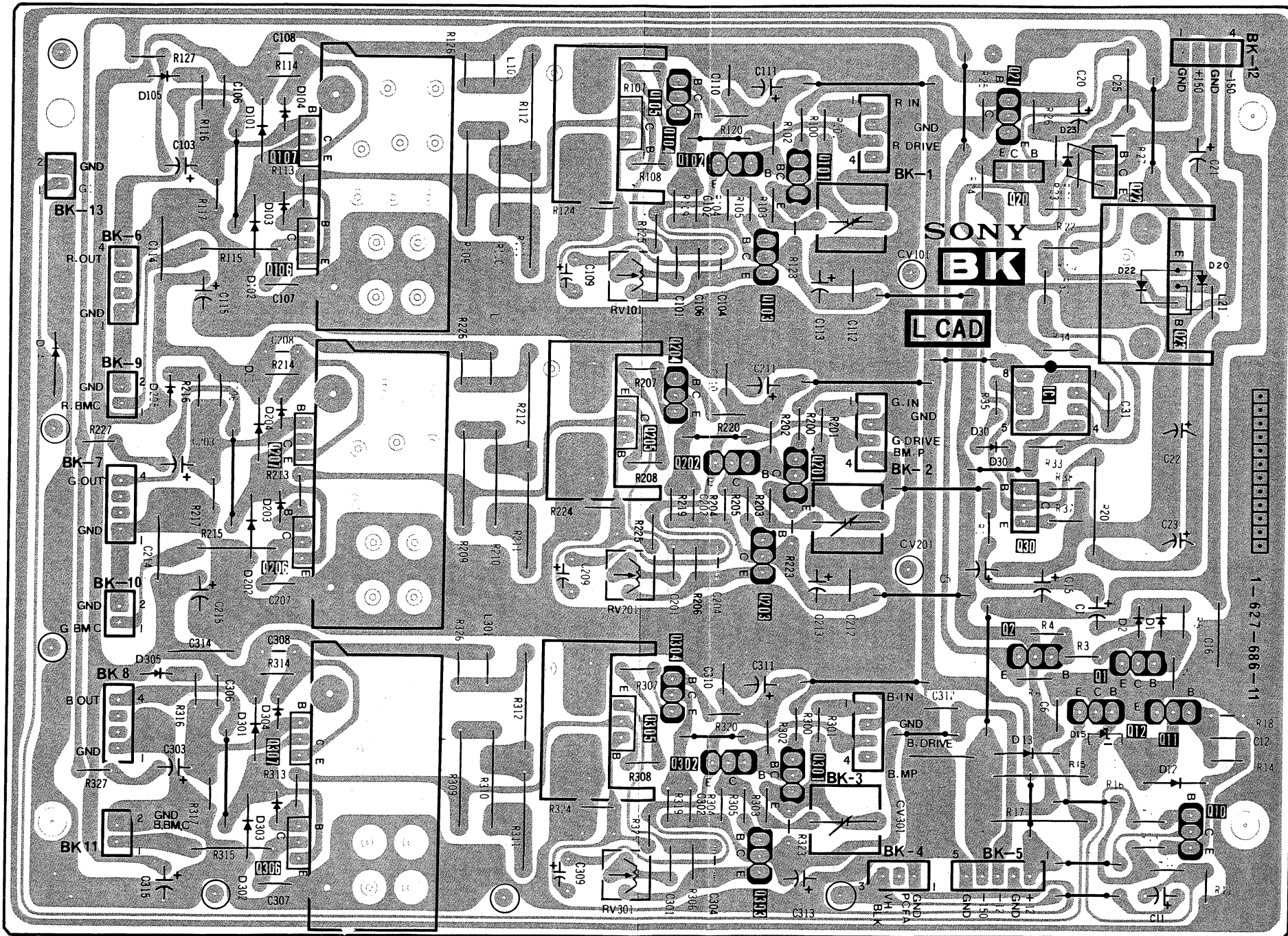


- : Conductor side pattern
- : Component side pattern

BK BK

**BK board (VIDEO OUT AMP)**

IC										
Q			107		105	104			21	
			106			102		103	101	20
			207		205	204				30
			206			202		203	201	2
			307		305	304				
		306			302		303	301		
D	14	105	101	104						
			102	103						
		205	201	204						
			202	203						
		305	301	304						
		302	303							
ADJ										

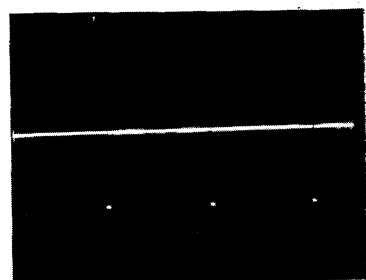




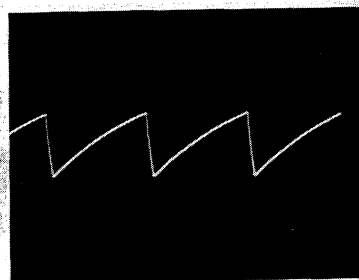
## D BOARD

IC1	CX23025	50/60 SELECTOR
2	CXA1268P	
3	TC4053BP	
4	UPC4558C	
5	NJM4558C	
6	TC4066BP	
7	UPC4558C	
8	TC4053BP	
9	UPC4558C	
10	UPC4082C	
11	UPC4558C	
12	UPC4558C	
13	UPC4082C	
14	NJM2903D	
15	NJM2903D	
16	UPC4558C	
17	NJM2903D	
18	TC4069UB	
19	UPC1377C	
20	UPC78M12H	+12V REG.
21	UPC79M12H	-12V REG.
22	UPC79M05H	+5V REG.
23	UPC79M05H	-5V REG.
24	TC4053BP	
25	UPC4082C	
Q1	DTC144ES	
6	2SC2785	
7	2SC2785	
8	DTA144ES	
9	2SC2785	
10	DTC144ES	
D1	1SS119	
2	1SS119	
3	RD7.5ES-B	
4	RD5.1ES-B	
8	1SS119	

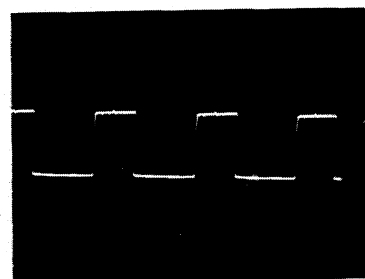
5. DIAGRAMS



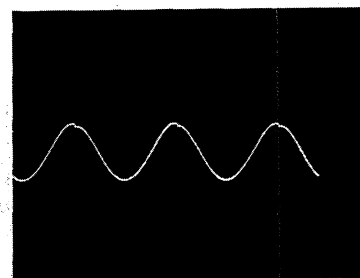
① 12 Vp-p(V)



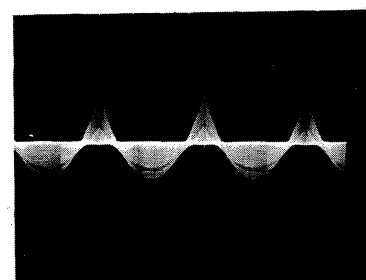
② 4 Vp-p(H)



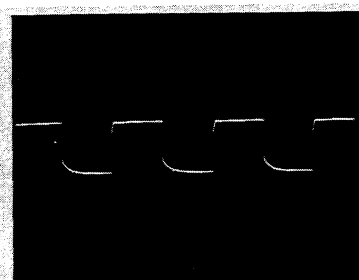
③ 10 Vp-p(H)



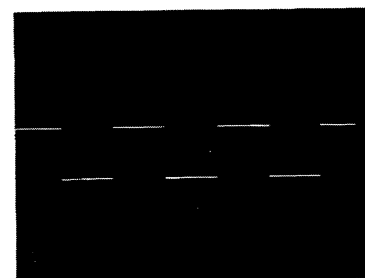
④ 1 Vp-p(V)



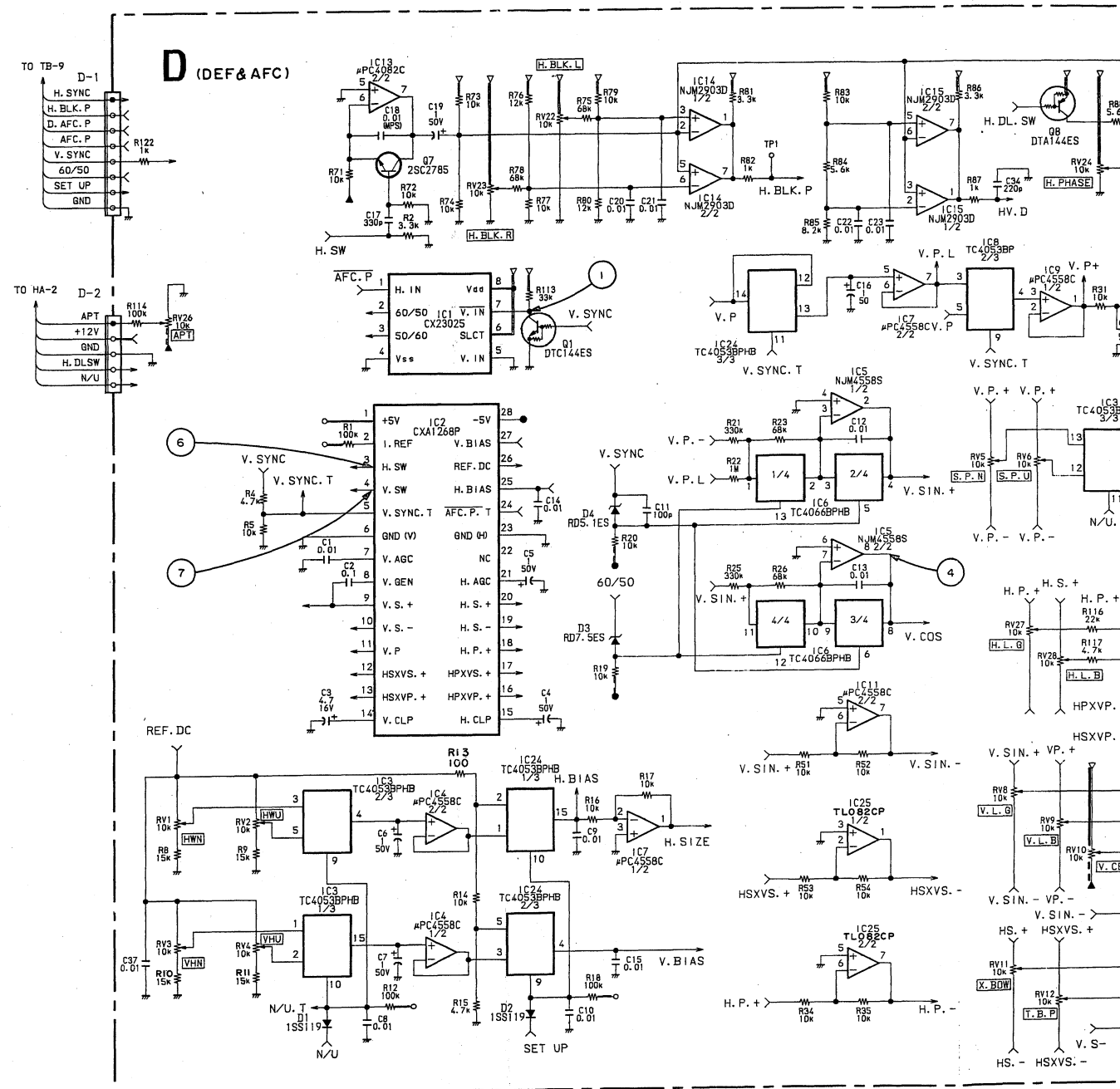
⑤ 3 Vp-p(H)



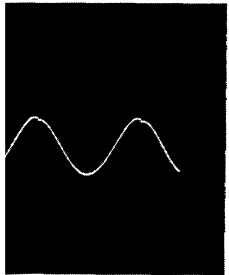
⑥ 3.2 Vp-p(H)



⑦ 3.2 Vp-p(V)



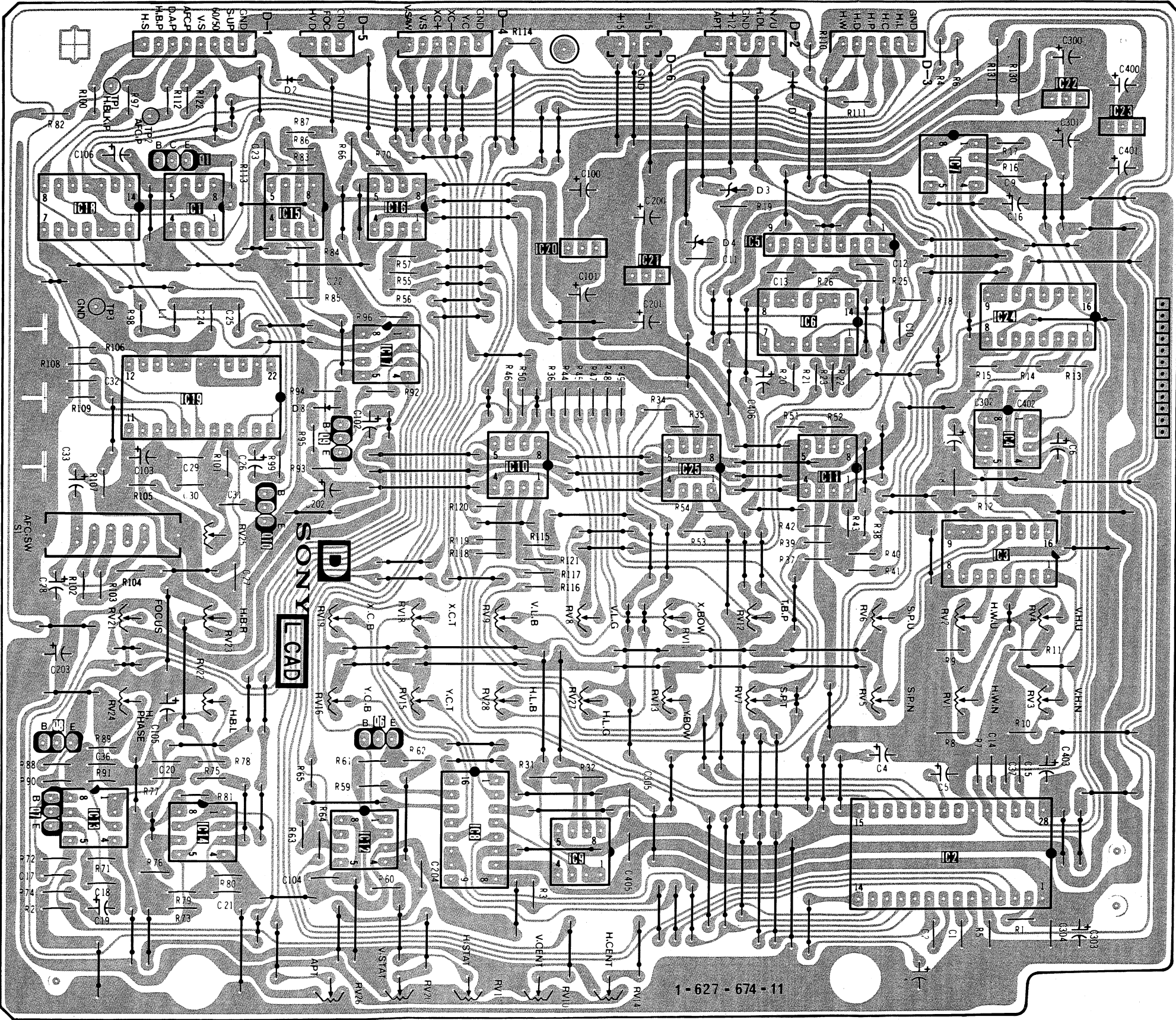
**D D**



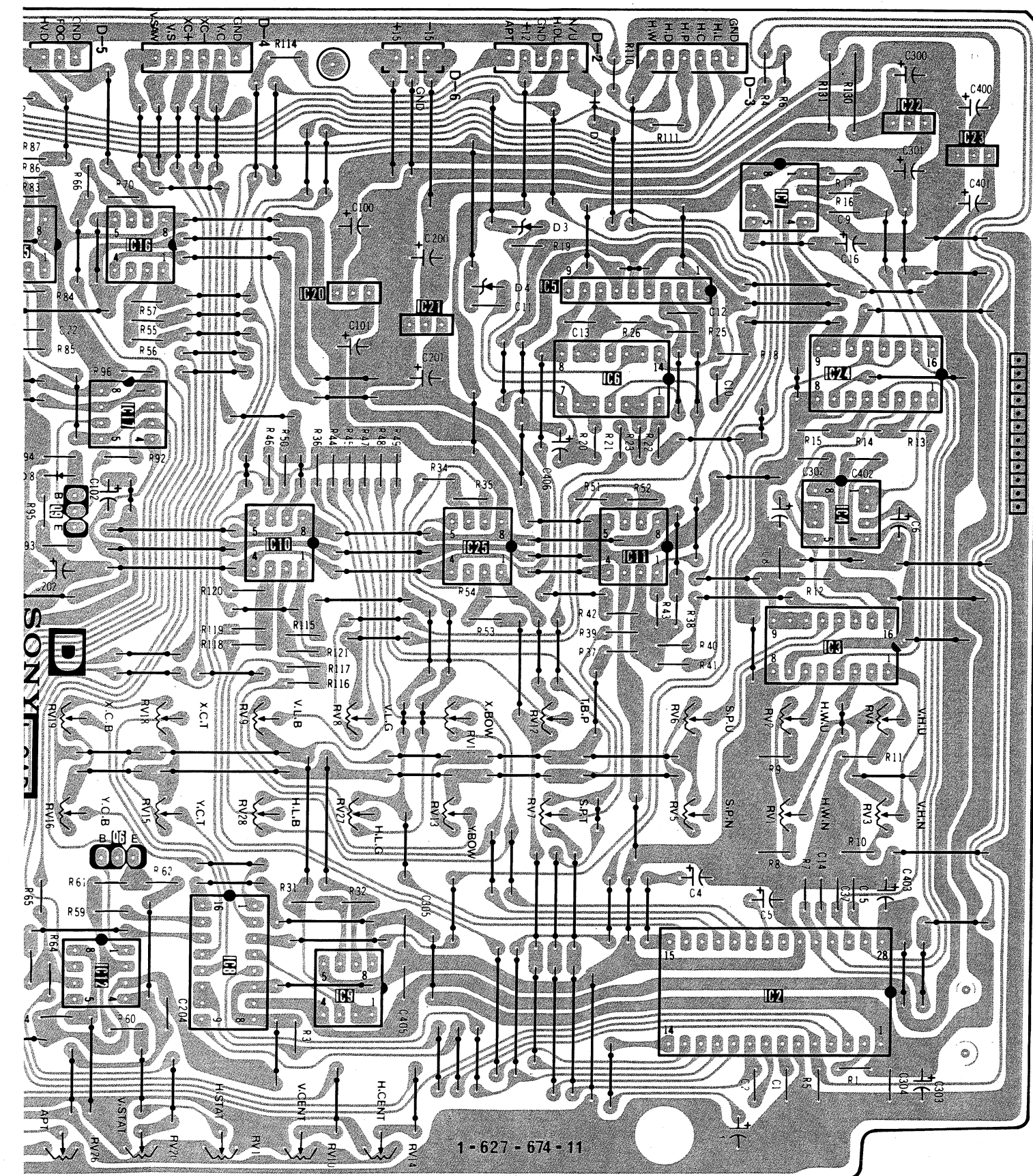
D board (DEF & AFC)

IC	Q	RV	TP
22	I		1
23			2
7			
18 1 15 16			
20 5	3		3
21			
6 24			
17			
19	9		
4			
10 25 11			
3			
10	25	21 19,18,9,8 12,6,2,4	
3			
21			
23			
22	11	11	
8 24			
6			
24			
16,15,28,27,13,7,5,1,3	2		
8			
6			
7			
13 14 12 8 9	2		
13			
14			
12			
8			
9			
26,20,17,10,14			
26,20,17,10,14			
26,20,17,10,14			
26,20,17,10,14			

170029911







EA BOARD

IC1	UPC1394C	P.W.M CONTROL
2	UPC1394C	P.W.M CONTROL
3	TL082CPC	BUFF/COMPARATOR
4	NJM2903D	
5	UPC4558C	H.CENT/O.C.P
Q1	2SA1175	H.PULSE BUFFER
2	2SA979	H.LIN AMP
3	2SD774	H.LIN AMP
4	2SA1173	H.LIN AMP OUT
5	2SA473	H.LIN AMP OUT
6	2SC2688	P.W.M. DRIVE
7	2SC2752	P.W.M. OUT
8	2SA1091	O.C.P
9	2SA1175	O.C.P
10	2SC2688	H.DRIVE
11	2SD1399CA	H.OUT
12	2SD1134	H.CENT
13	2SB858	H.CENT
14	2SC2688	DC-D CONV.DRVIE
15	2SC2551	O.V.P
16	2SC2534	DC-DC CONV.
17	2SC2688	
19	2SA1175	
20	2SC2785	
1	RD12ES-B2	BIAS
3	1SS119	BIAS
4	1SS119	BIAS
5	RH-1A	H.DRIVE
6	RD7.5ES-B2	PROTECTOR
7	RH-1A	PROTECTOR
8	ERD28-04S	
9	RH-1A	H.P.RECT
10	RH-1A	H.P.RECT
12	V11N	
13	RH-1A	HV CONV
14	RH-1A	DC-DC CONV.
15	RH-1A	DC-DC CONV.
16	RH-1A	
17	RD12ES-B2	
19	1SS119	
20	1SS119	
24	IC UPC574J	
25	1SS119	
26	1SS119	
27	CR02AM-4	
28	1SS119	
29	IC UPC574J	
30	1SS119	

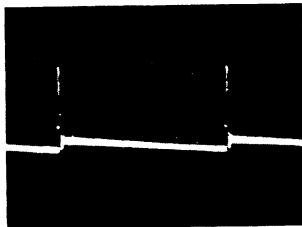
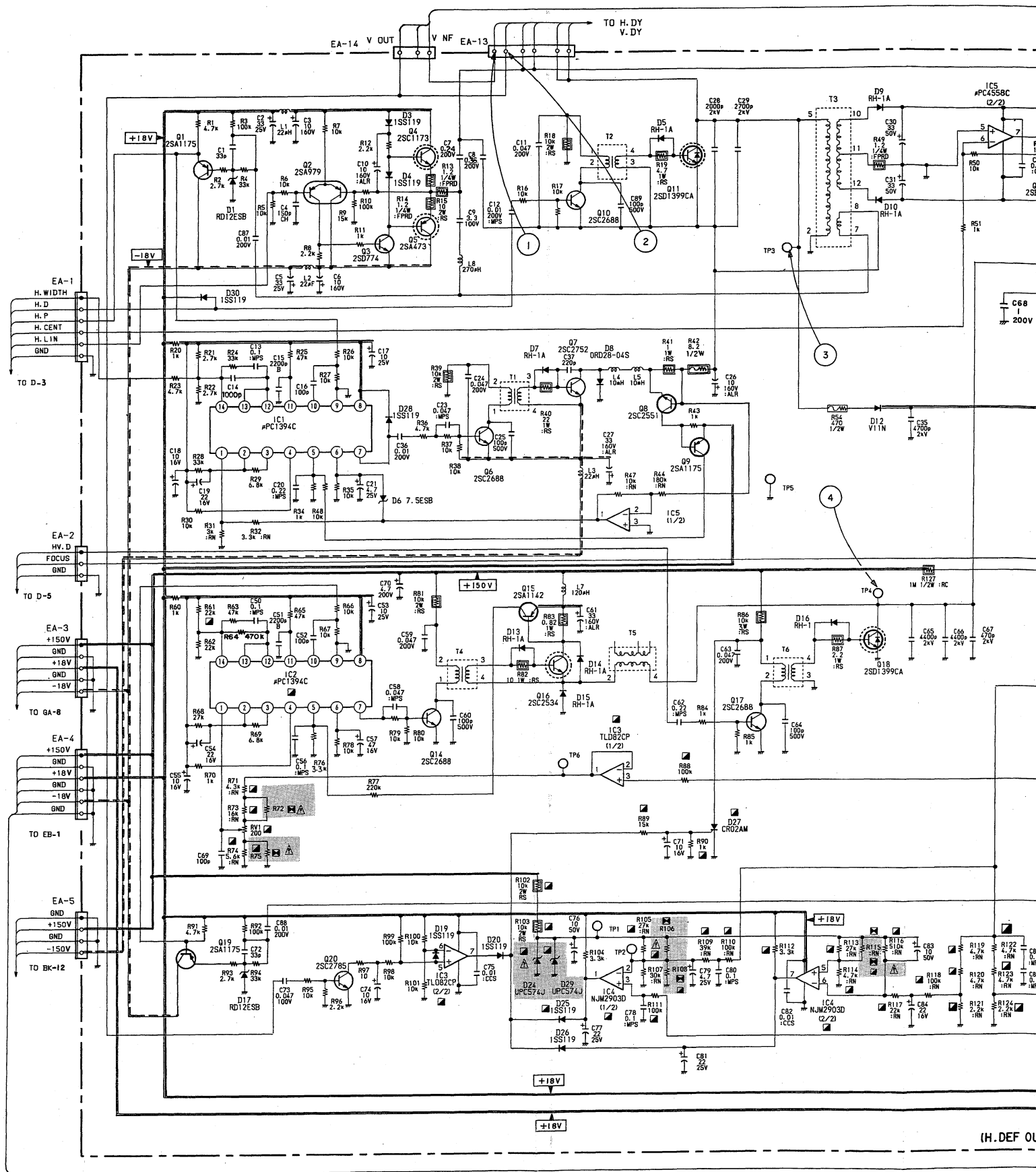
EB BOARD

Q1	2SA979	V.AMP
2	2SD774	V.AMP
3	2SA893A	V.AMP
4	2SC1890A	V.AMP
5	2SB860	V.AMP OUT
6	2SD1137	V.AMP OUT
7	2SB861	V.RETRACE SW
8	2SC2551	V.RETRACE SW
9	2SC2785	
10	2SA1175	
D1	GP08D	DC.STOPPER
2	GP08D	DC.STOPPER
3	1SS119	BIAS
4	1SS119	BIAS
5	1SS119	BIAS
6	1SS119	PROTECTOR

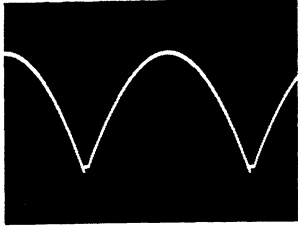
C BOARD

Q1	2SC3675	
2	2SC3675	
3	2SC2551	
4	2SC2785	
5	2SC2785	
6	2SC2551	
7	2SC3675	

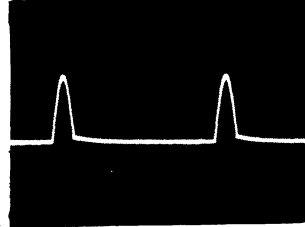
EA board (H OUT)  
EB board (V OUT)



① 1100 Vp-p(V)

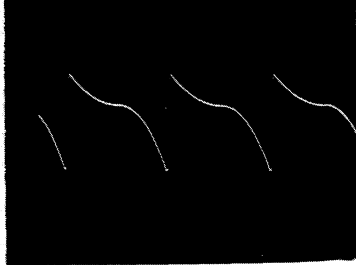


② 3.7 Vp-p(V)



③ 1250 Vp-p(H)

④ 1100 Vp-p(H)

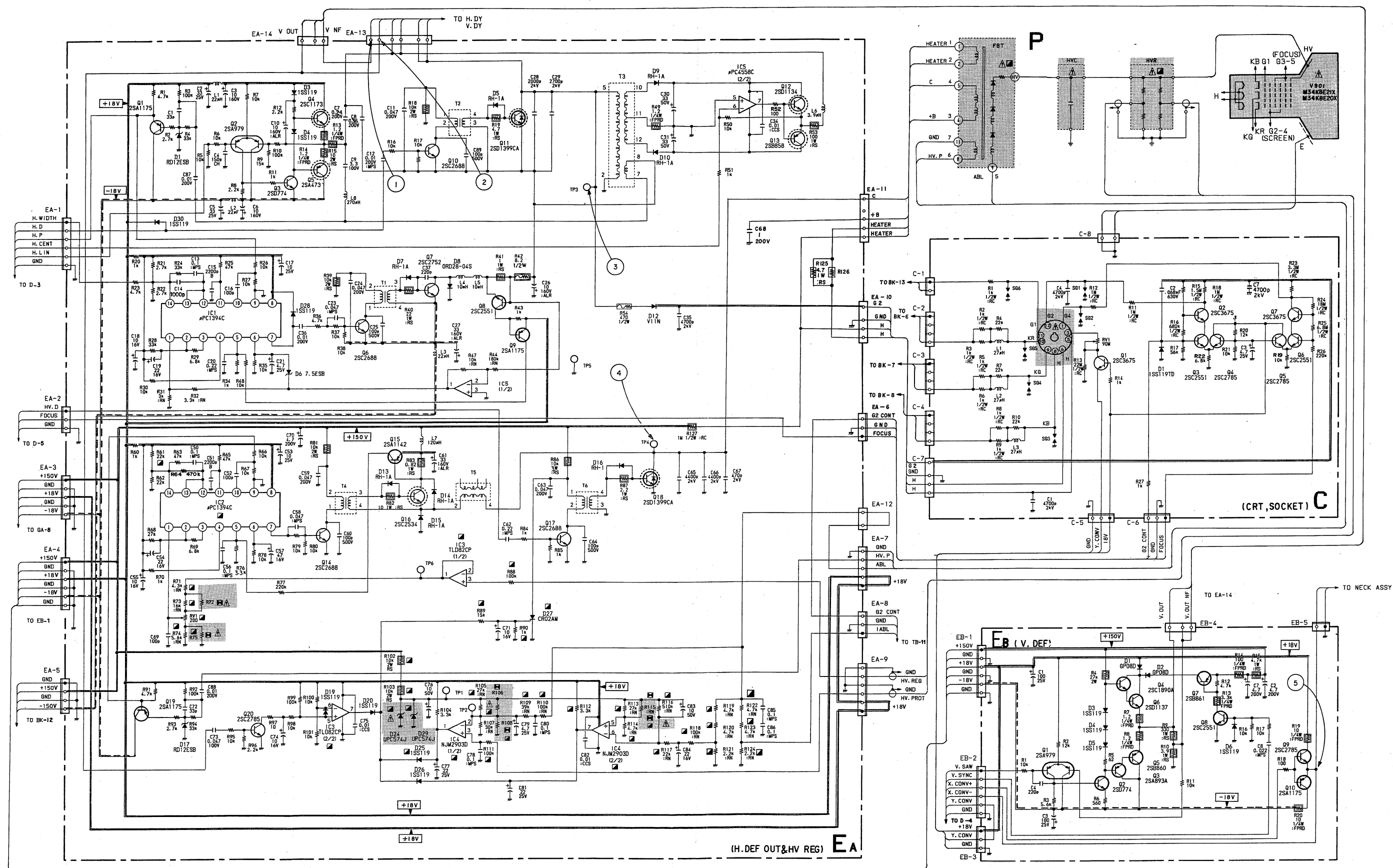


⑤ 1.6 Vp-p(V)



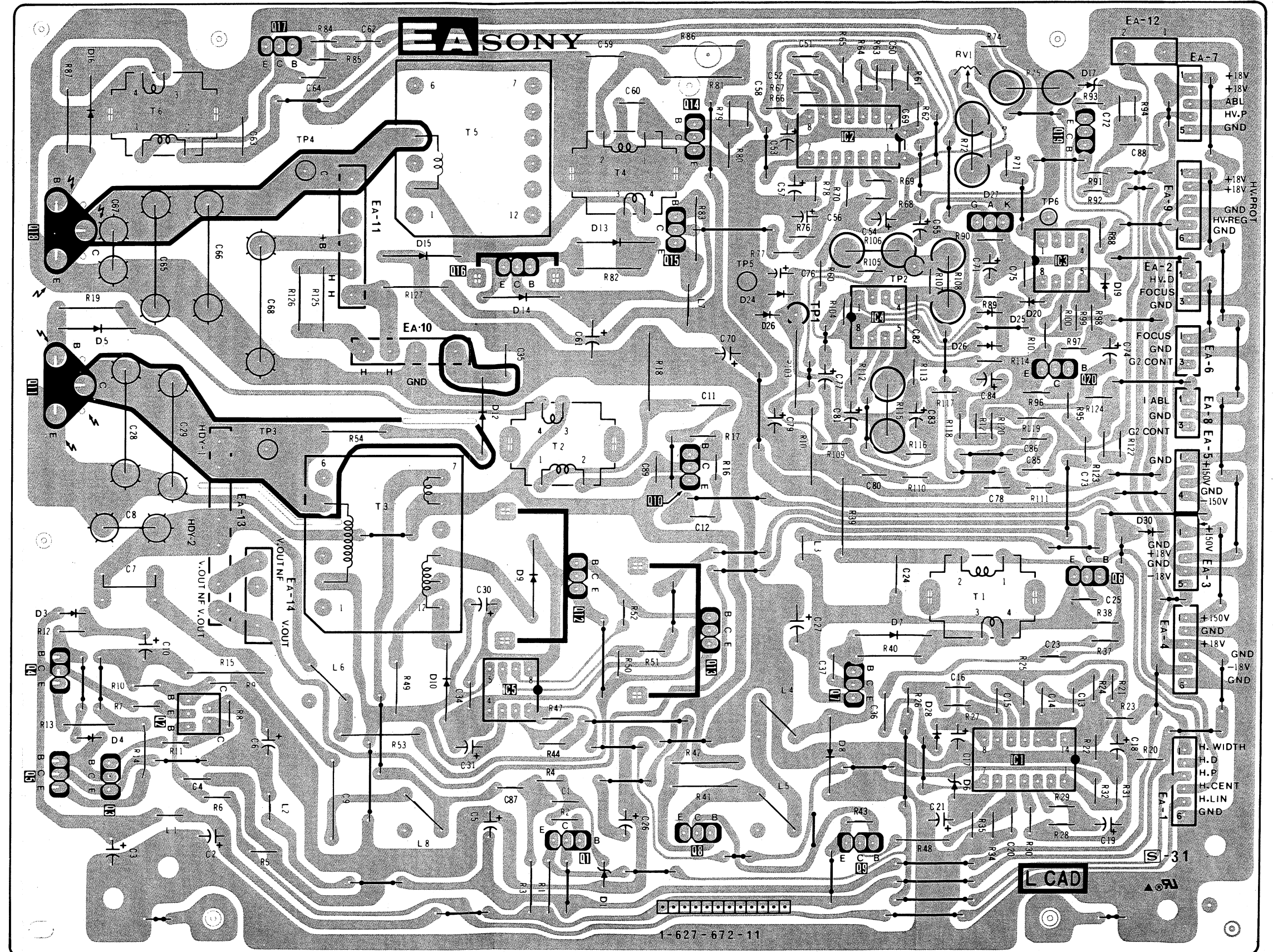
# EA, EB, C, P EA, EB, C, P

EA board (H OUT)  
EB board (V OUT)



EA board (H OUT)

IC	Q	D	RV	TP
	17	16	I	
	14	17		
2	19	4		
	27	6		
3	18	13		
	15	5		
4	16	19	2	
	20	1		
11	24	25		
	29	26		
	20	3		
	12			
	30			
	6	9		
12	3	7		
	10			
4	13	28		
5	7	8		
	2	6		
5	3			
	8			
	9			





**EB board (V DEF)**

**C board (CRT SOCKET)**

**P board (FBT)**

## 5. DIAGRAMS

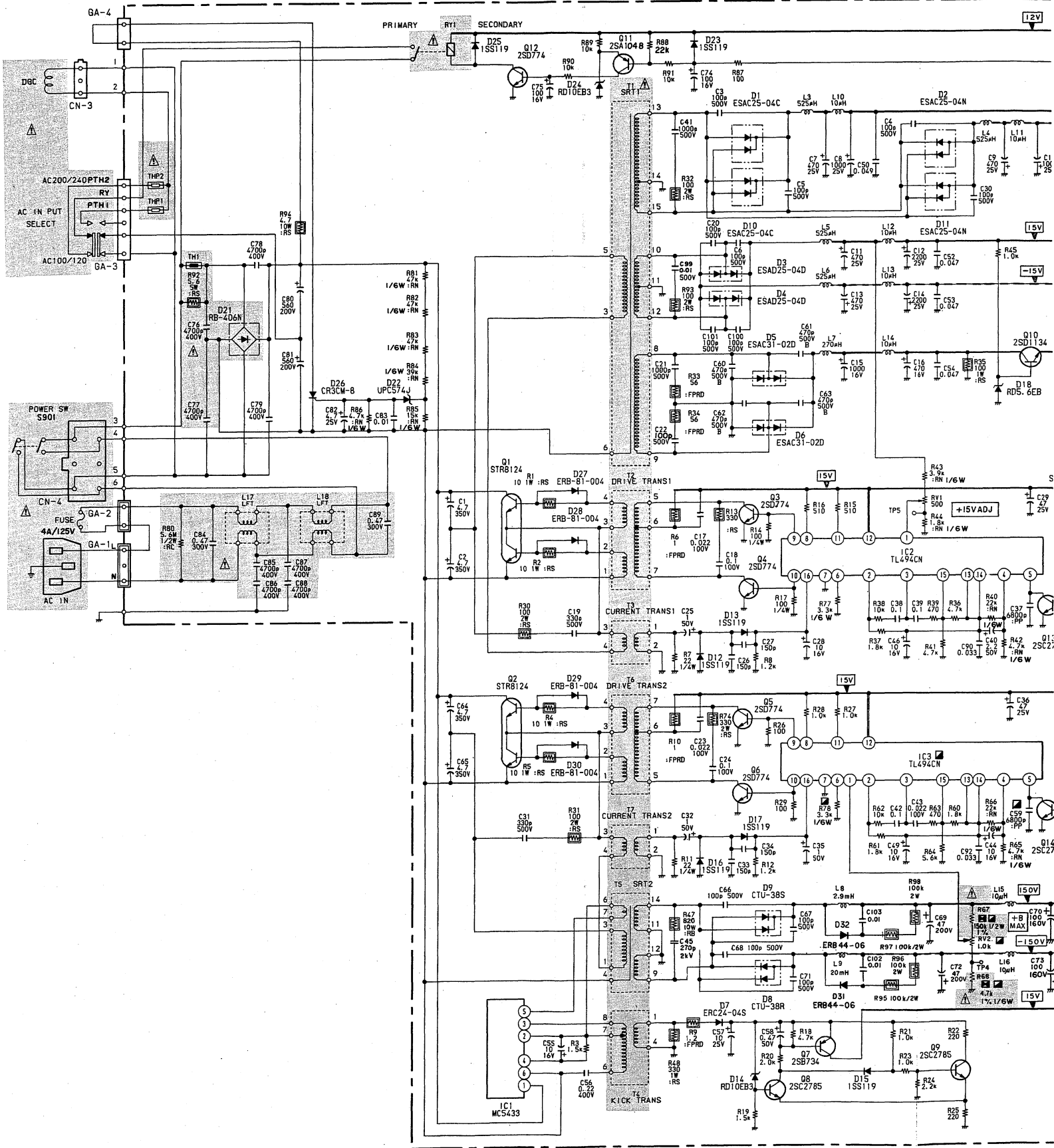
GA BOARD

IC1	MC5433	STARTER
2	TL494CN	DC REG
3	TL494CN	DC REG
Q1	STR8124	DC-DC CONV.
2	STR8124	DC-DC CONV.
3	2SD774	CONV. DRIVE
4	2SD774	CONV. DRIVE
5	2SD774	CONV. DRIVE
6	2SD774	CONV. DRIVE
7	2SB734	SOFT. START
8	2SC2785	SOFT. START
9	2SC2785	SOFT. START
10	2SD1134	+5V REG.
11	2SA1048	D.G. CONTROL
12	2SD774	D.G. CONTROL
13	2SC2785	O.V.P SW
14	2SC2785	O.V.P SW
D1	ESAC25-04C	+18V RECT
2	ESAC25-04N	-18V RECT
3	ESAD25-04D	+15V RECT
4	ESAD25-04D	-15V RECT
5	ESAC31-02D	+5V RECT
6	ESAC31-02D	-5V RECT
7	ERC24-045	START. RECT
8	CTU-38R	-150V RECT
9	CTU-38S	+150V RECT
10	ESAC25-04C	+18V RECT
11	ESAC25-04N	-18V RECT
12	1SS119	O.C.P RECT
13	1SS119	O.C.P RECT
14	RD10EB3T	STARTER
15	1SS119	STARTER
16	1SS119	O.C.P RECT
17	1SS119	O.C.P RECT
18	RD5.6E-B2TN	+5V REG
20	SIB01-02	DC. STOPPER
21	RB406N	AC RECT
22	UPC574J	O.V.P
23	1SS119	DISCHARGE
24	RD10EB3T	+10V REG
25	1SS119	SW PROTECT
26	CR3CM-8	O.V.P
27	ERB81-004	CONV. DRIVE
28	ERB81-004	CONV. DRIVE
29	ERB81-004	CONV. DRIVE
30	ERB81-004	CONV. DRIVE
31	ERB44-06	
32	ERB44-06	

GB BOARD

Q1	2SA1048	O.V.P (-150V)
2	2SC2785	O.V.P (-150V)
3	2SA1048	O.V.P (+150V)
4	2SC2785	O.V.P (+150V)
5	2SA1048	O.V.P (+150V)
6	2SA1048	O.V.P (+15V)
7	2SA1048	O.V.P (+15V)
8	2SC2785	O.V.P (+15V)
9	2SA1048	O.V.P (-15V)
10	2SC2785	O.V.P (-15V)
D1	1SS119	PROTECTOR
2	RD8.2ES-T1B2	REFERENCE
3	1SS119	PROTECTOR
4	1SS119	MIX.
5	1SS119	MIX.
6	RD8.2ES-T1B2	REFERENCE
7	TLR124	O.V.P INDICATE
8	1SS119	PROTECTOR
9	1SS119	PROTECTOR
10	TLR124	O.V.P INDICATE
11	RD8.2ES-T1B2	REFERENCE
12	1SS119	MIX.
13	1SS119	MIX.
14	1SS119	MIX.
15	1SS119	PROTECTOR
16	1SS119	PROTECTOR
17	RD8.2ES-T1B2	REFERENCE
18	1SS119	MIX.
19	1SS119	MIX.

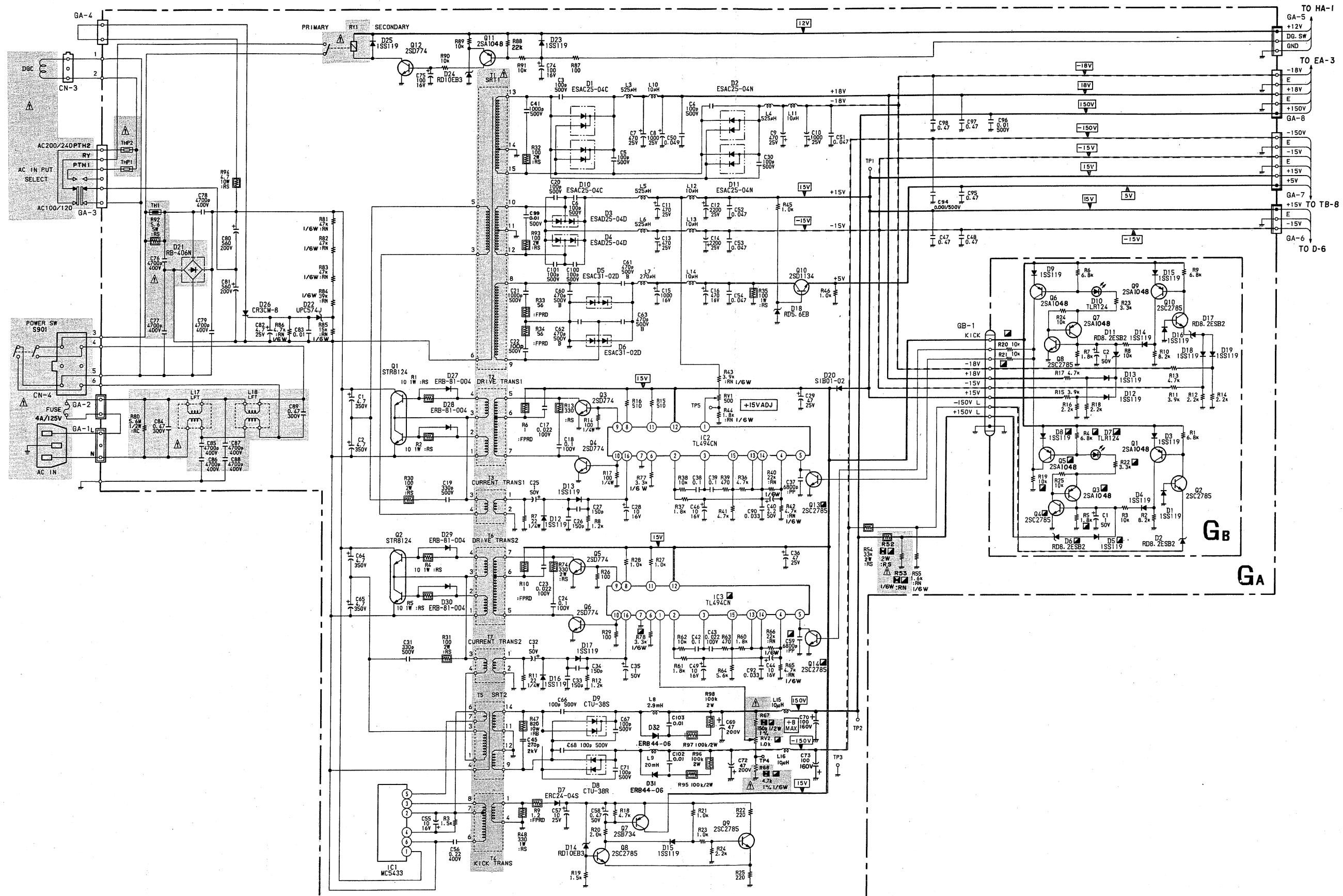
GA board (AC RECT, DC REG)  
GB board (OVER VOLTAGE PROTECTOR)





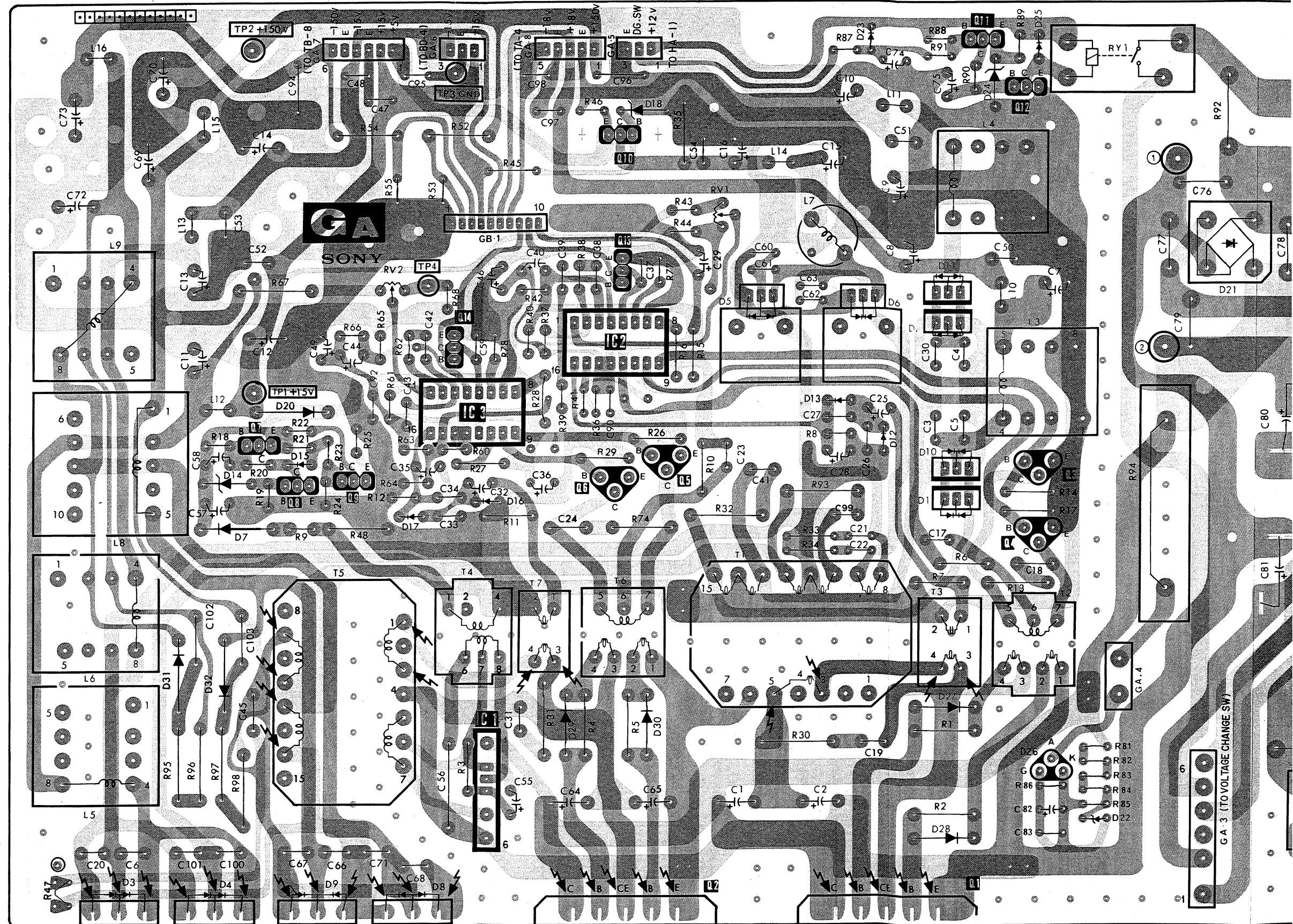
# GA, GB GA, GB

GA board (AC RECT, DC REG)  
GB board (OVER VOLTAGE PROTECTOR)



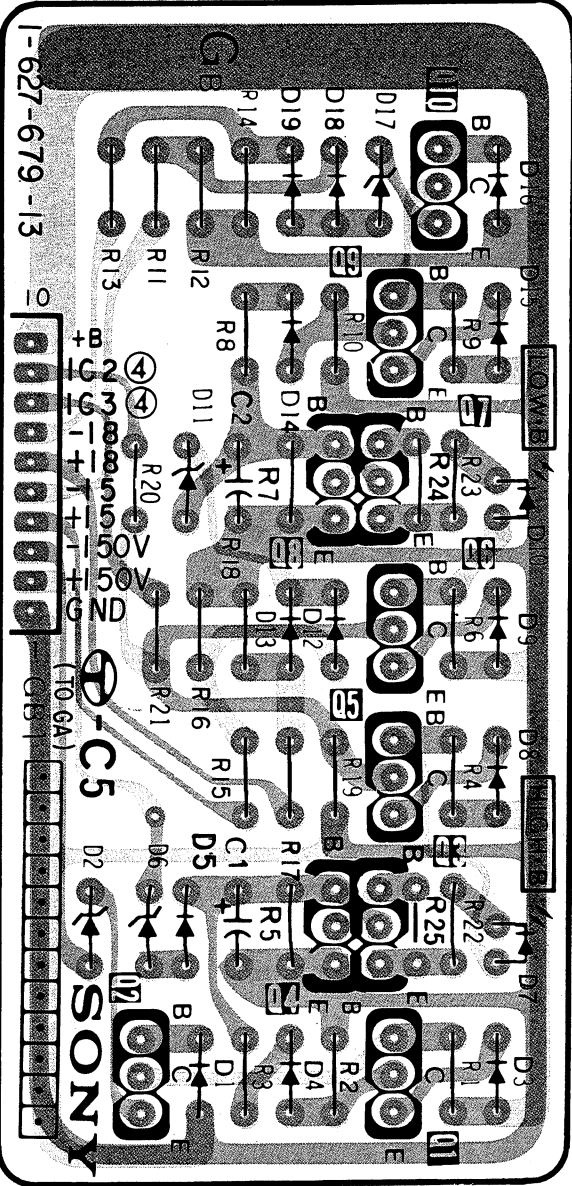
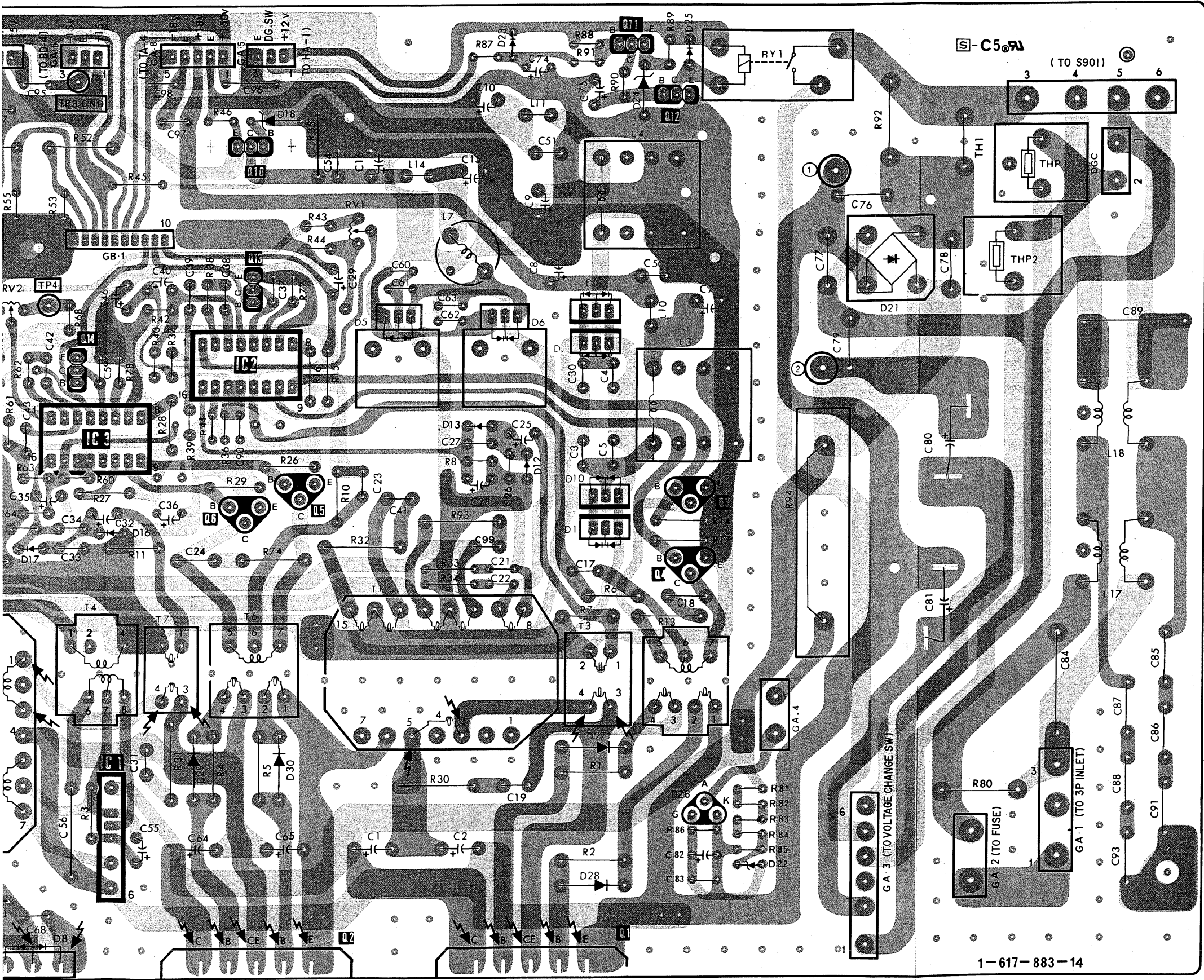
GA board (AC RECT, DC REG)

IC	Q	D	ADJ-TP
		23 25	TP2
	11		
	12	24	TP3
		18	
10			
			RV1
		21	
	13	11	RV2 TP4
		5 6	
		2	
2			
	14		
3			TP1
		20	
		13	
	7	12	
	5 6 3	15	
		10	
	9 8	14	
		16	
		17	
		7	
		31, 32	
		29	
		30	
		26	
		22	
		28	
		3	
		4	
		9	
	2	1	





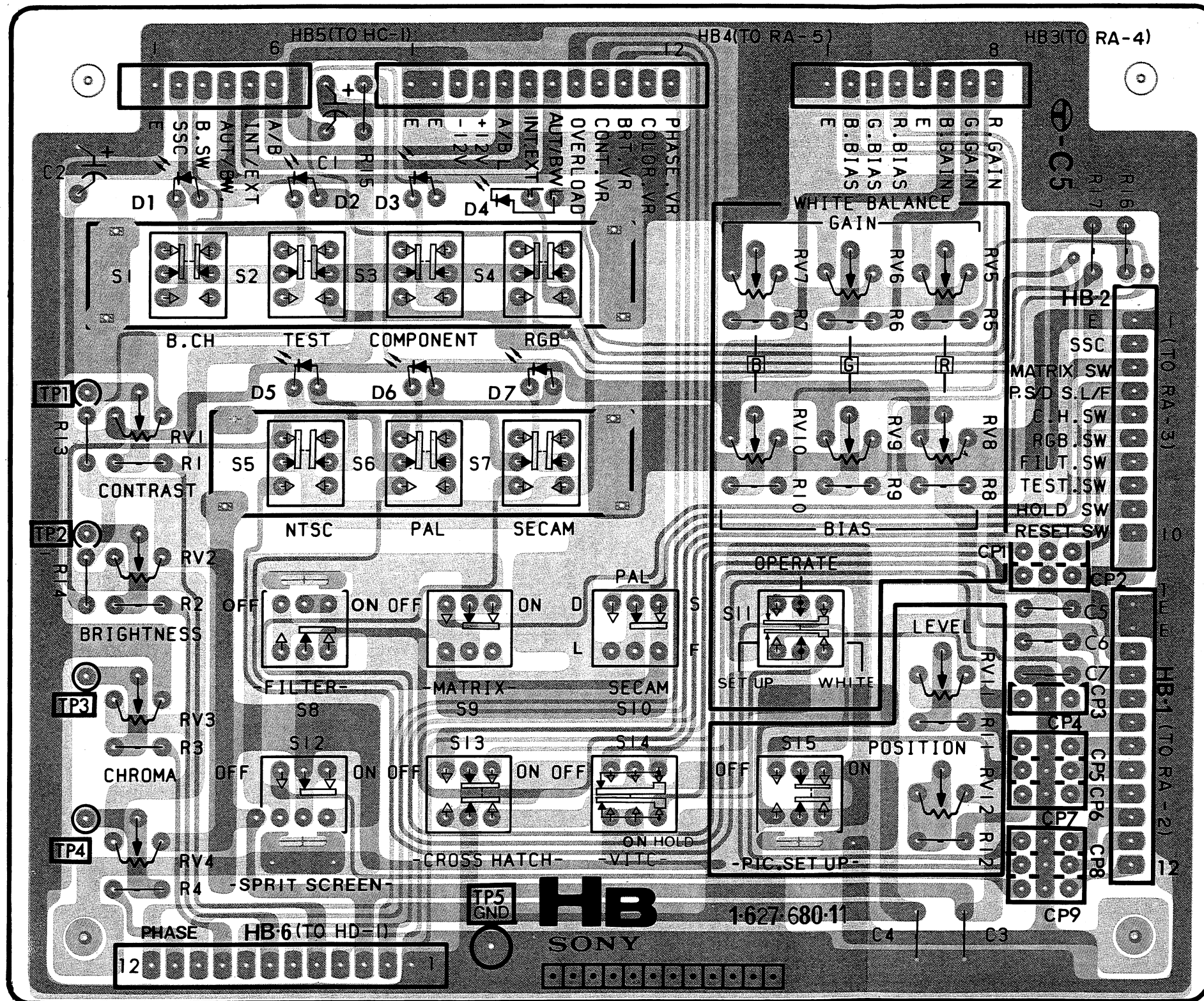
GB board (OVER VOLTAGE PROTECTOR)



- Conductor side pattern
- Component side pattern

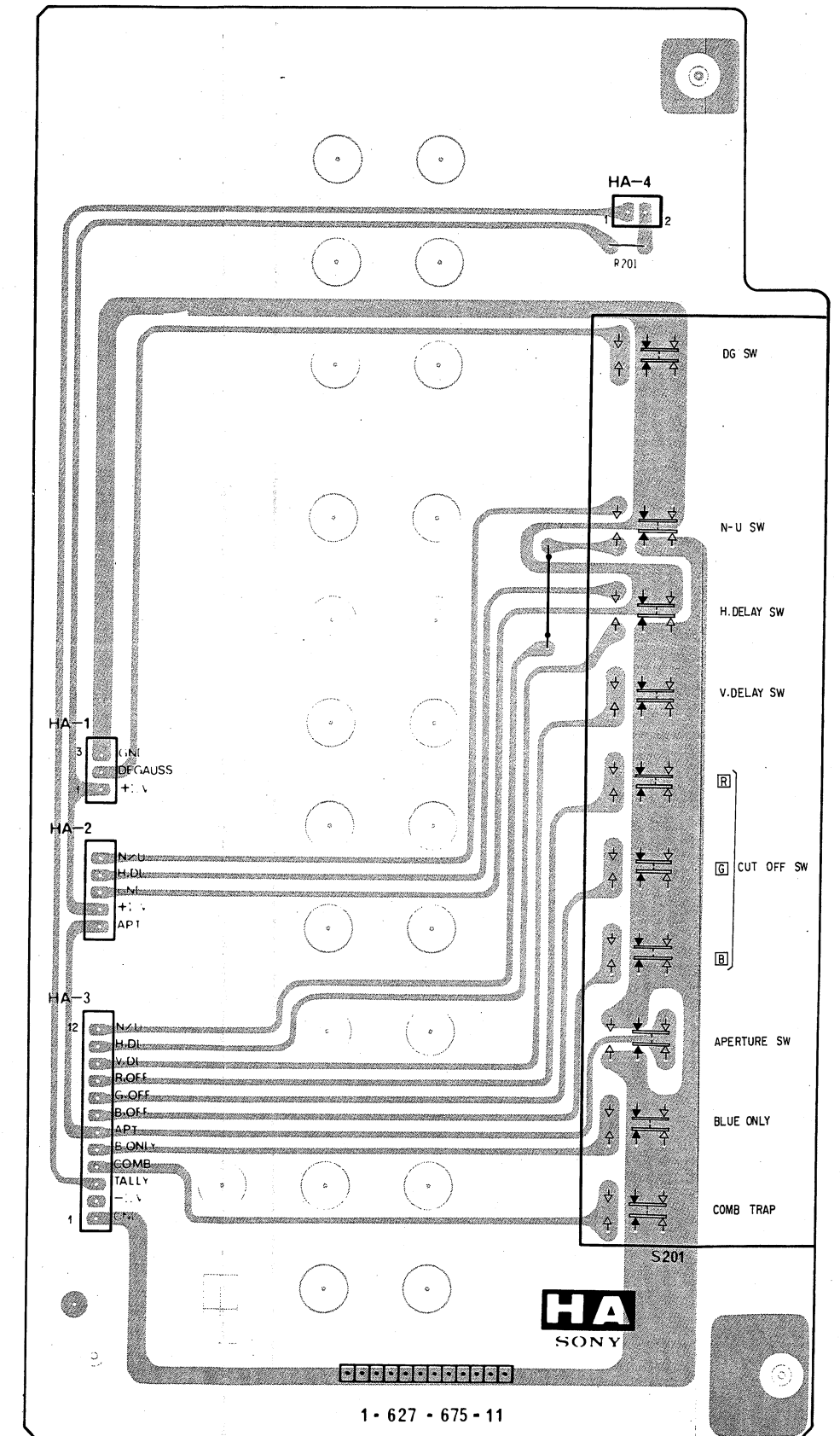


HB board (SYSTEM SWITCH)



— : Conductor side pattern  
— : Component side pattern

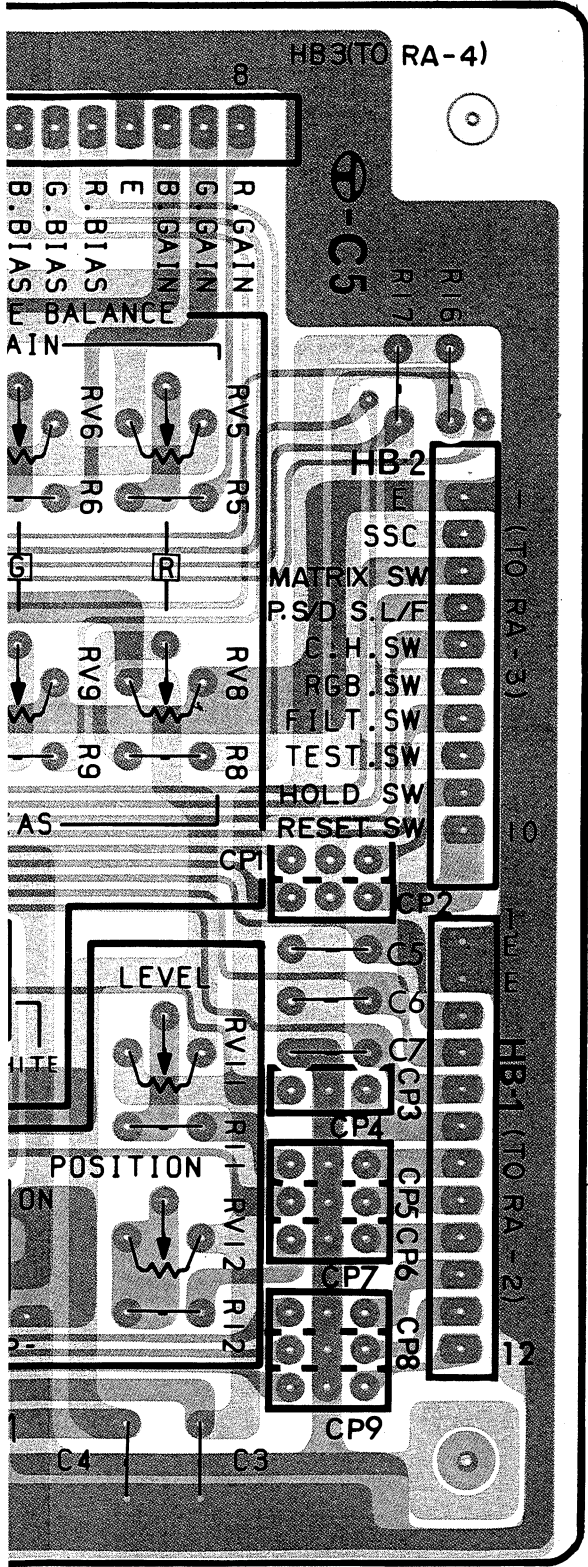
HA board (LEFT CONTROL PANEL)





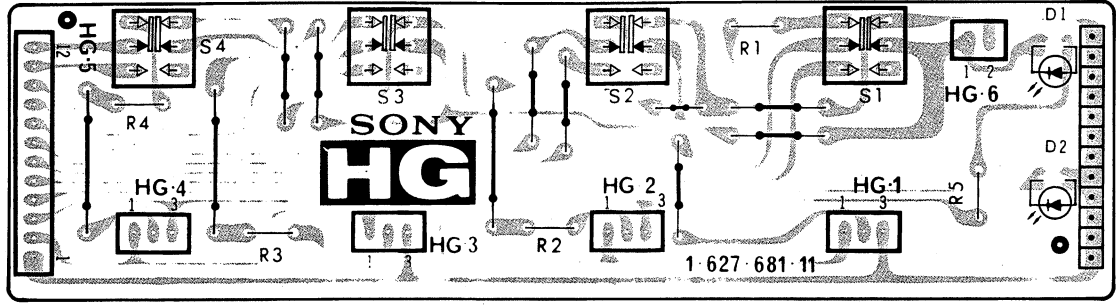
HB, HA, HH, HG, HC, X, Y      HB, HA, HH, HG, HC, X, Y

HA board (LEFT CONTROL PANEL)



● : Conductor side pattern  
● : Component side pattern

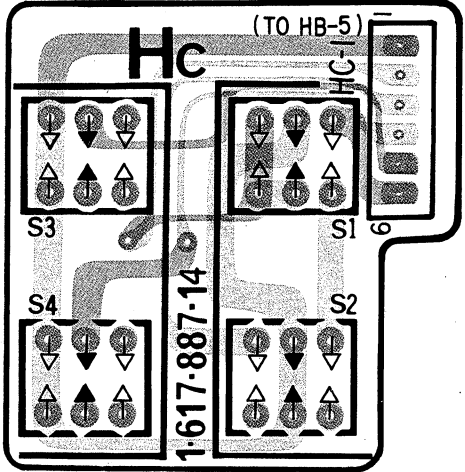
HG board (CONTROL PANEL 2)



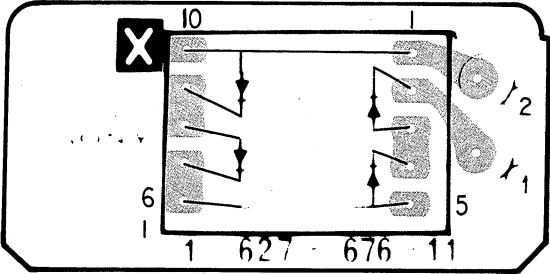
HH board (CONTROL PANEL 1)



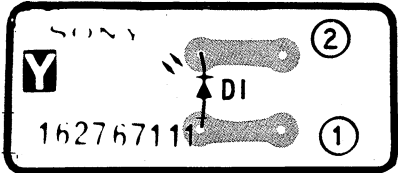
HC board (INPUT SELECT)



X board (TALLY)

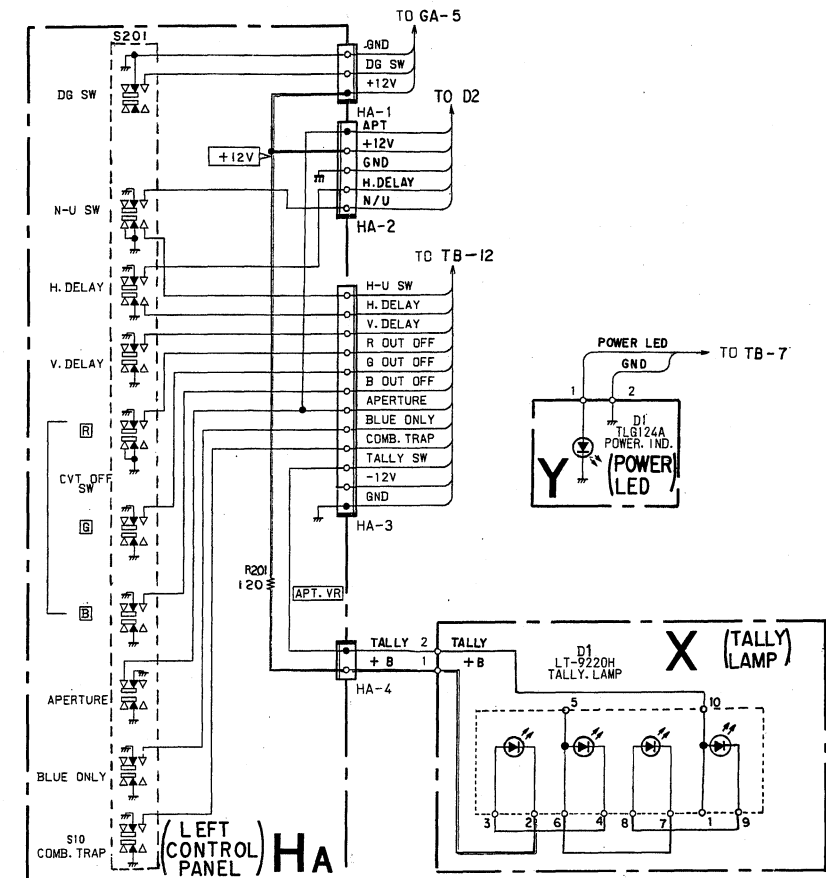
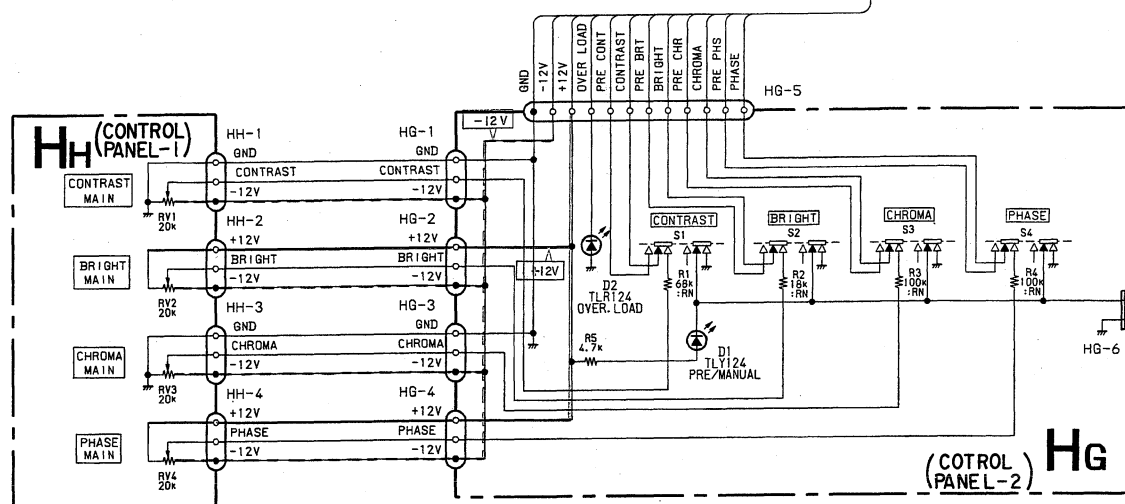
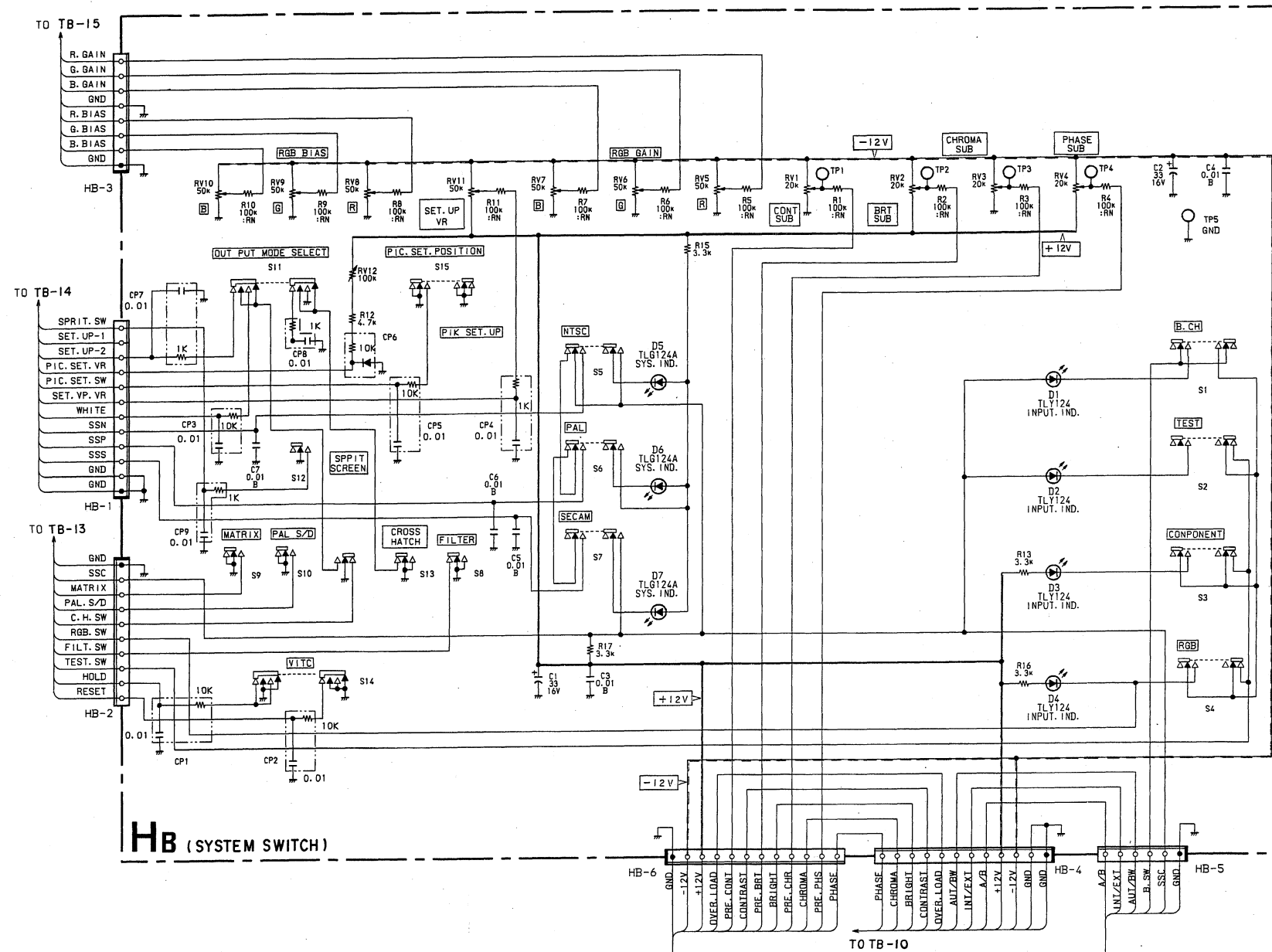


Y board (POWER LED)



# HB, HA, HH, HG, HC, X, Y HB, HA, HH, HG, HC, X, Y

HA board (LEFT CONTROL PANEL), HB BOARD (SYSTEM SWITCH), HC board (INPUT SELECT)  
HD board (MANUAL CONTROL), X board (TALLY), Y board (POWER LED)



HB BOARD

D1	TLY124	INPUT MODE INDICATOR
2	TLY124	INPUT MODE INDICATOR
3	TLY124	INPUT MODE INDICATOR
4	TLY124	INPUT MODE INDICATOR
5	TLG124A	SYSTEM INDICATOR
6	TLG124A	SYSTEM INDICATOR
7	TLG124A	SYSTEM INDICATOR

HG BOARD

D1	TLY124	PRE/MANUAL INDICATOR
2	TLR124	OVER LOAD INDICATOR

X BOARD

D1	LT-9220H	TALLY LAMP
----	----------	------------

Y BOARD

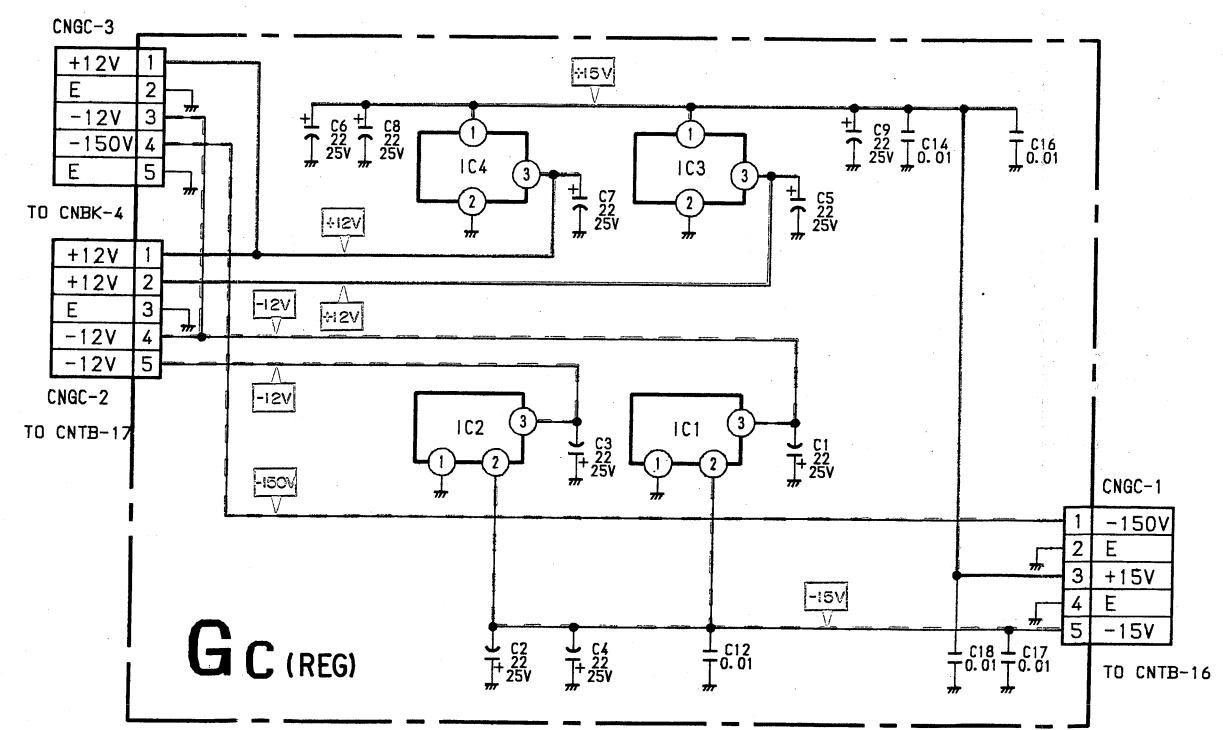
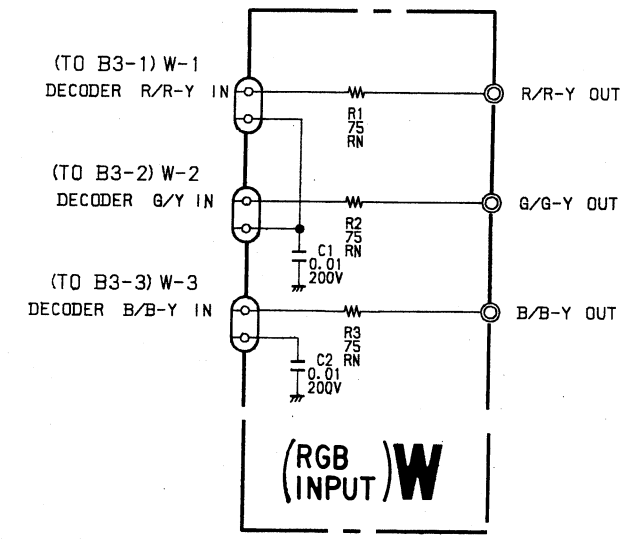
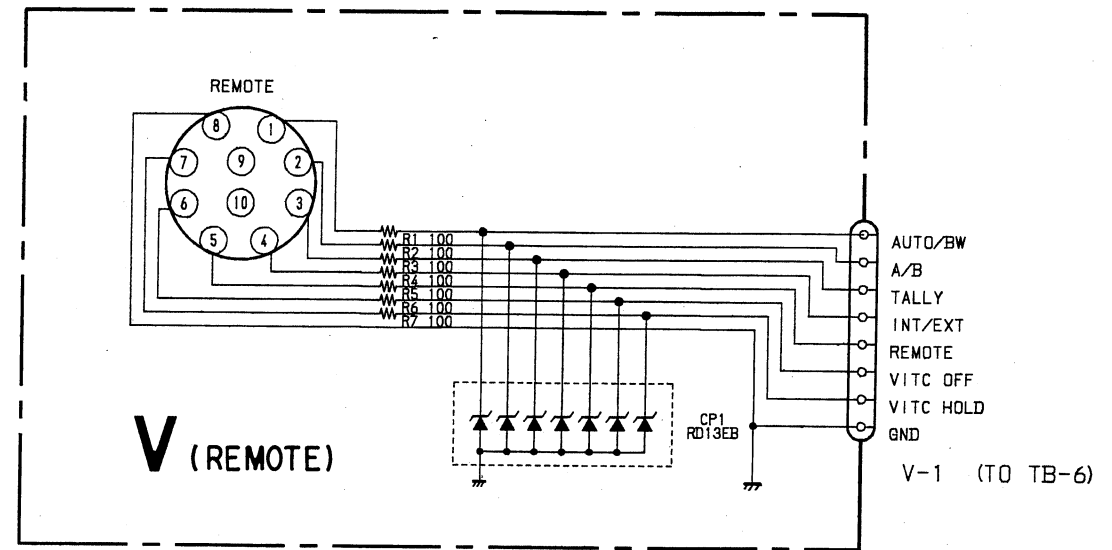
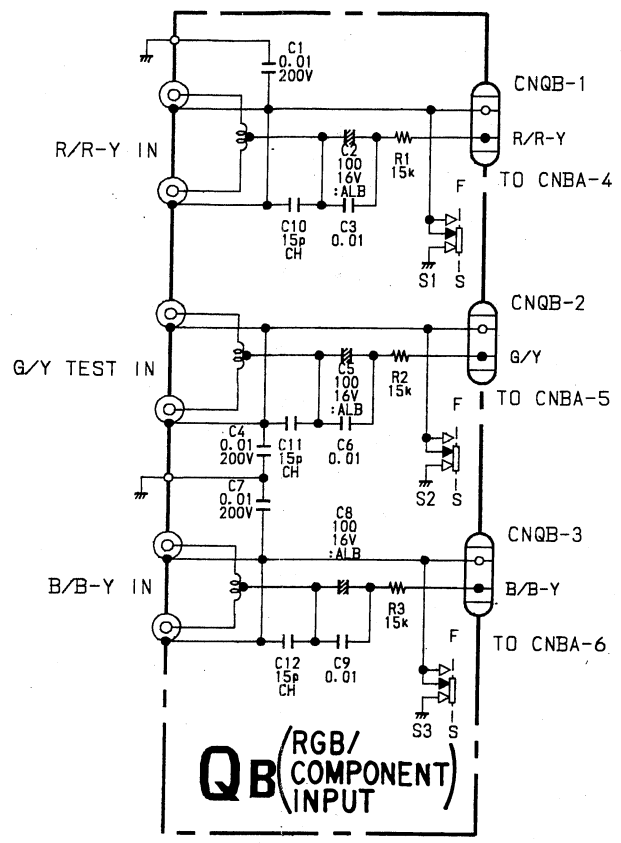
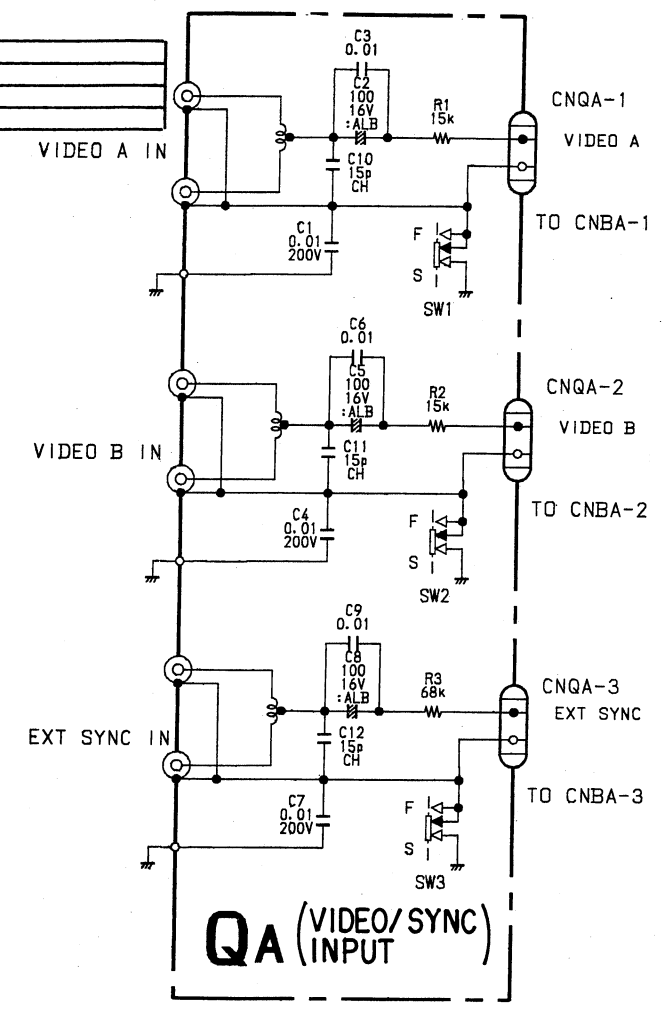
D1	TLG124A	POWER INDICATOR
----	---------	-----------------

QA, QB, GC, V, W    QA, QB, GC, V, W

GC board (REG) QA board (COMPOSITE VIDEO INPUT) QB board (RGB/COMPONENT INPUT)  
V board (REMOTE) W board (RGB/COMPONENT & VECTOR)

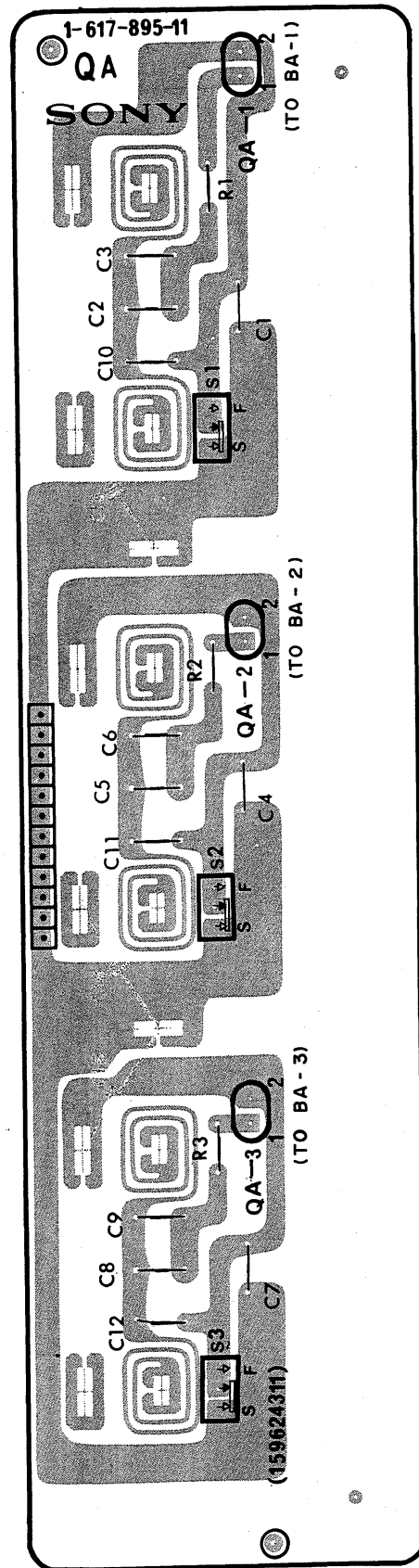
GC BOARD

IC1	uPC7912H	-12V REG
2	uPC7912H	-12V REG
3	uPC7812H	+12V REG
4	uPC7812H	+12V REG

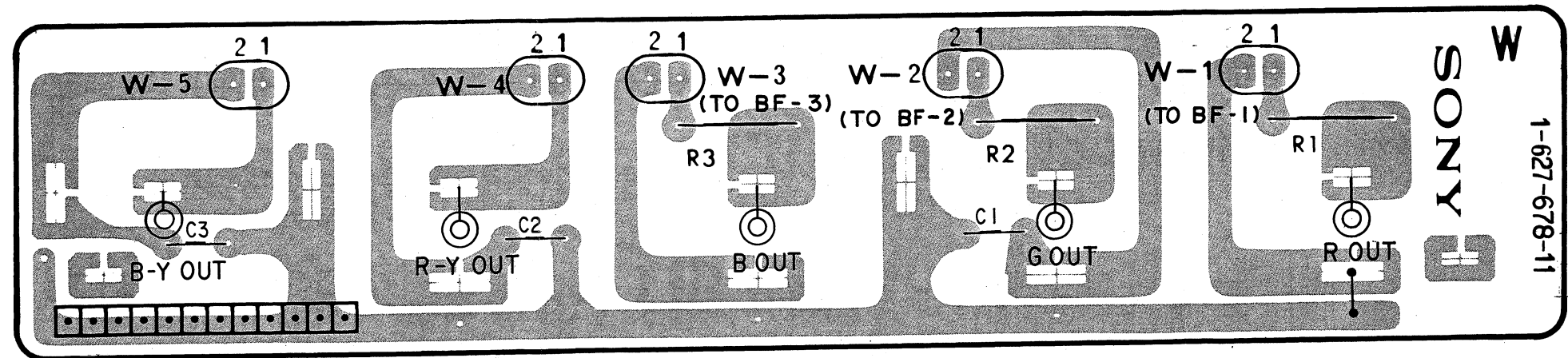


**QA, QB, GC, V, W      QA, QB, GC, V, W**

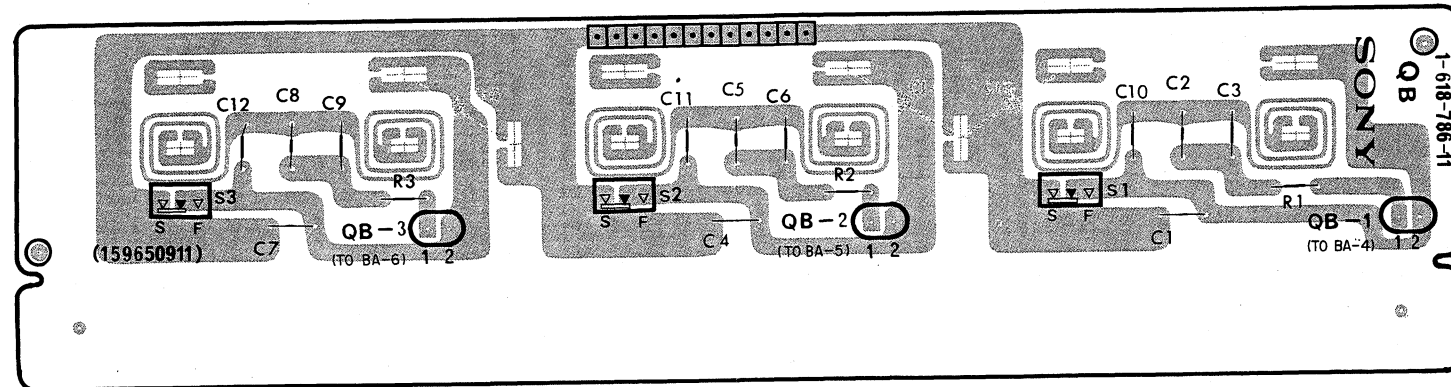
**QA board (COMPOSITE VIDEO INPUT)**



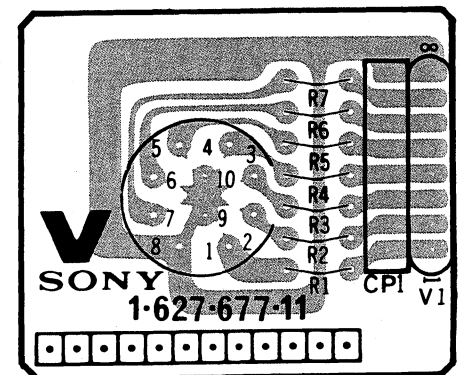
## W board (RGB/COMPONENT & VECTOR)



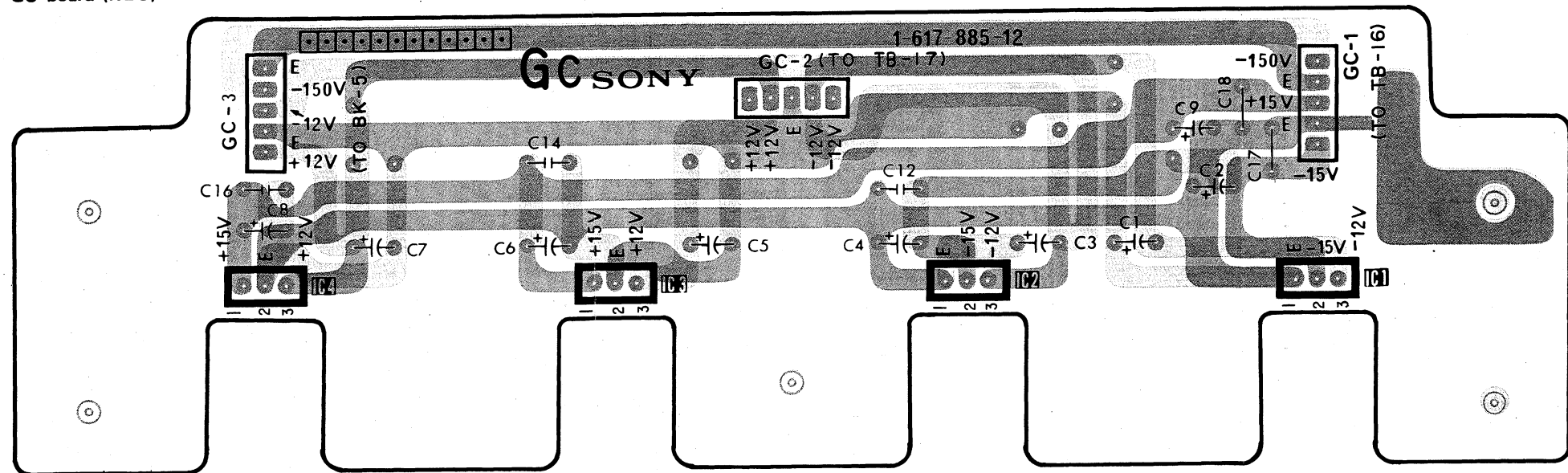
### QB board (RGB/COMPONENT INPUT)





### V board (REMOTE)



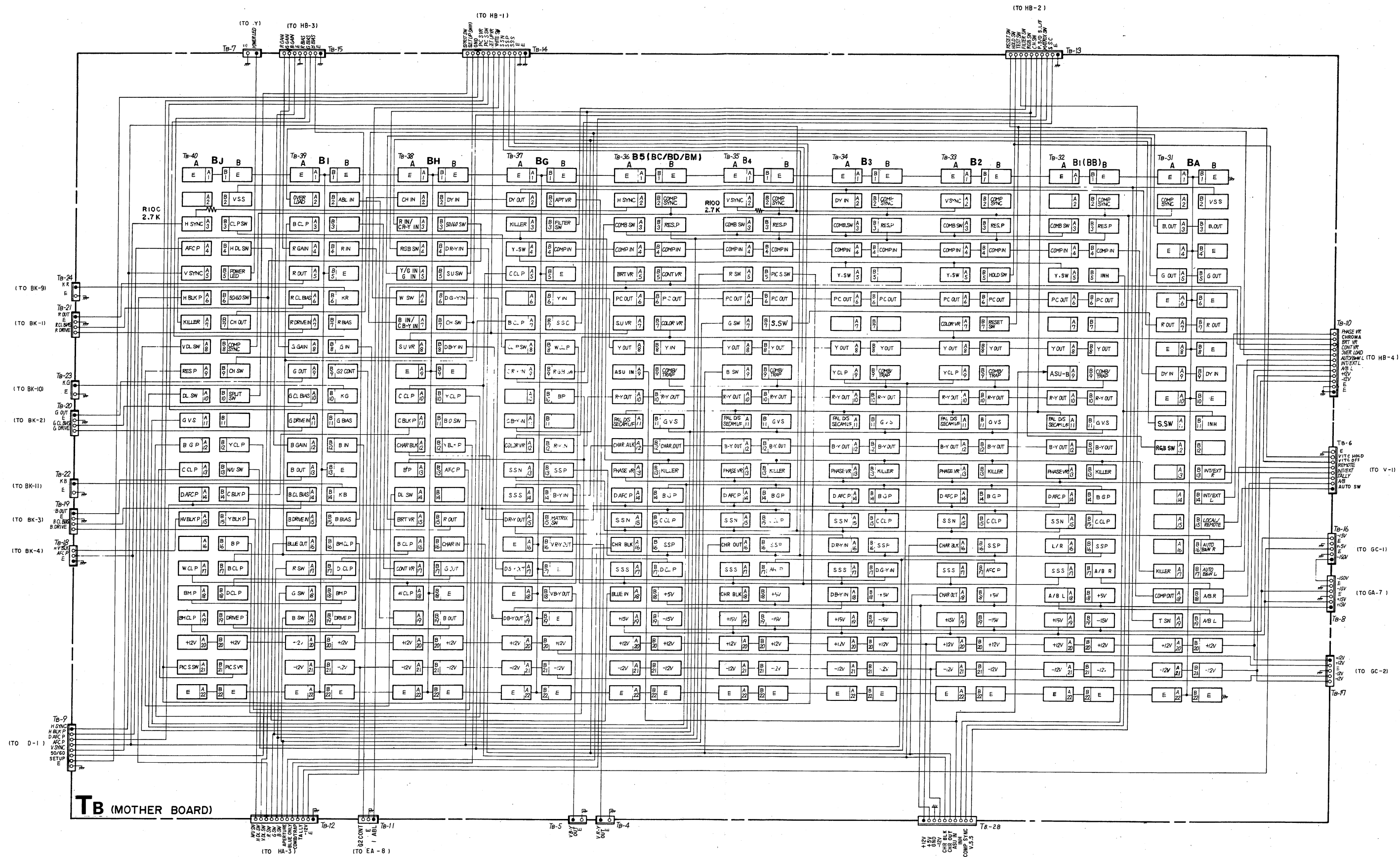
### GC board (REG)



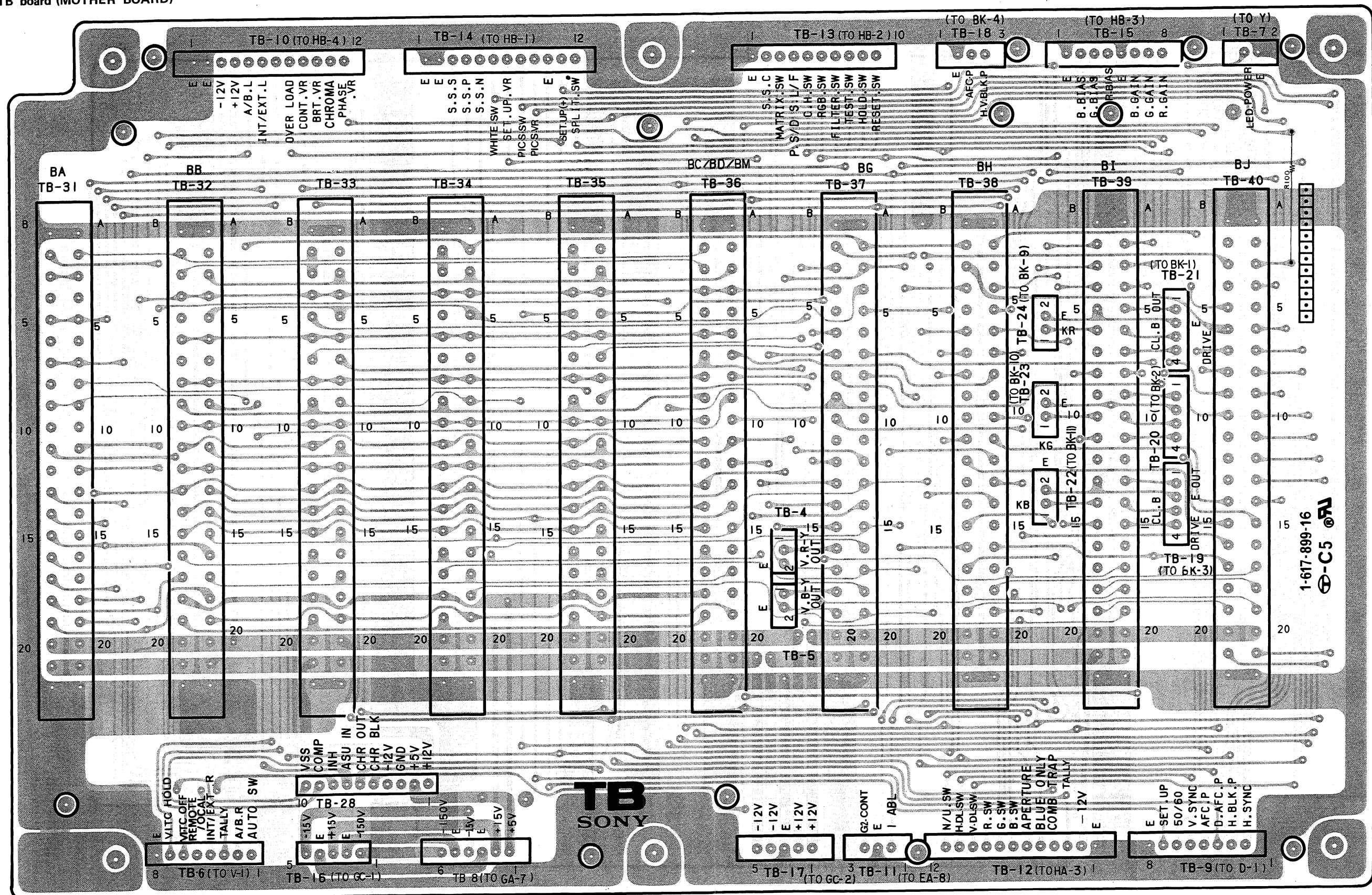
- : Conductor side pattern
- : Component side pattern



## TB board (MOTHER BOARD)



TB board (MOTHER BOARD)

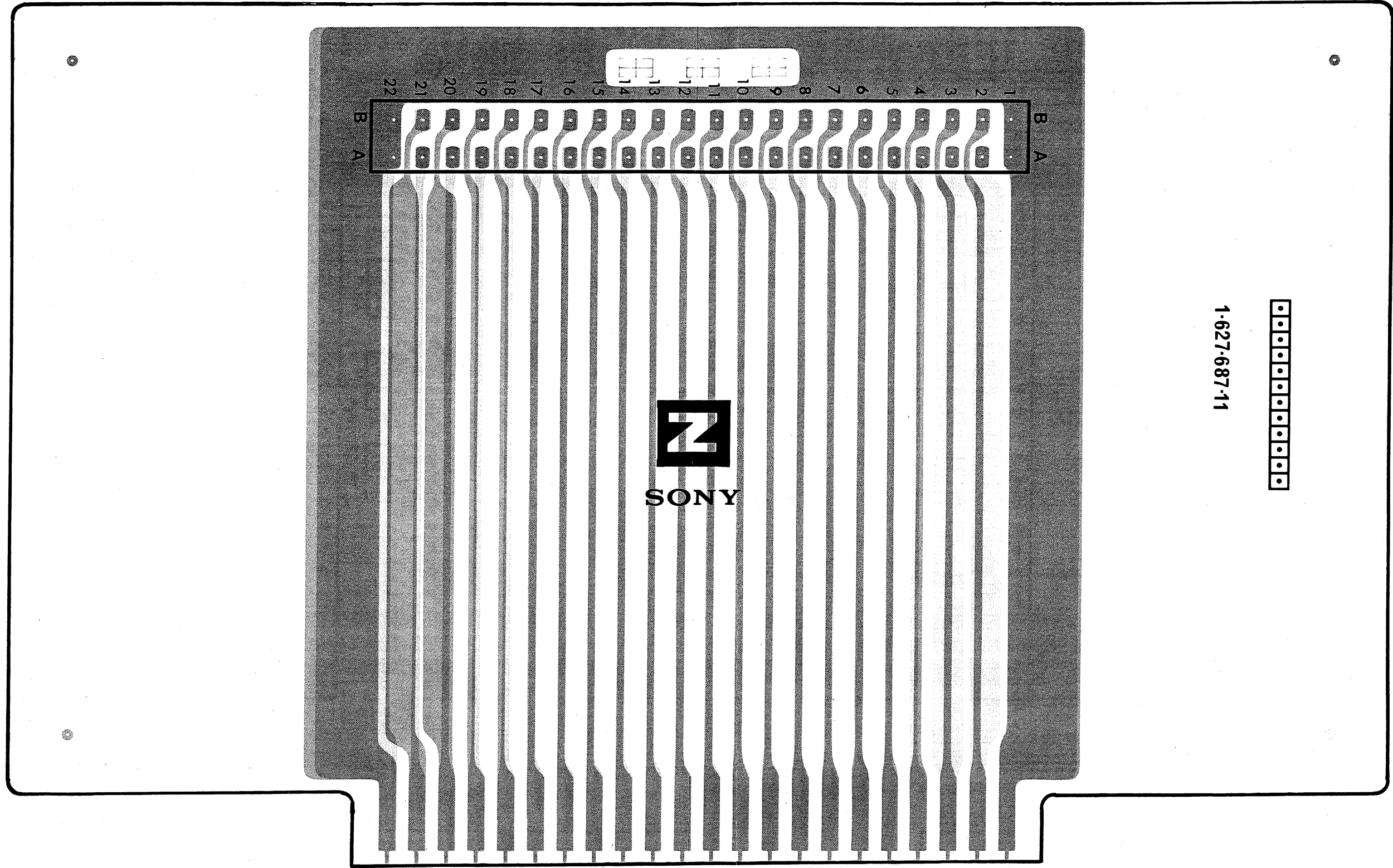


- Conductor side pattern
- Component side pattern



Z Z

Z board (EXTENSION BOARD)

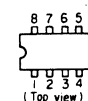


1-627-687-11

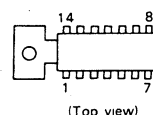


# 5-4. SEMICONDUCTORS

BA4558  
CX23025  
HA17558  
NJM2903D  
NJM4558D  
NJM4558S  
RC4558PD  
TL082CP  
μPC4082C  
μPC4558C



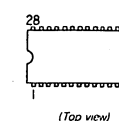
CX-158  
CX-718D



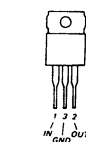
CX-894



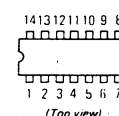
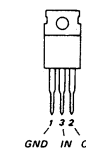
CXA1268P  
MPC1394C



HD14001BP  
HD14011BP  
HD14023BP  
HD14066BP  
HD14069UBP  
HD14071BP  
HD14073BP  
HD14081BP  
HD14093BP  
MB84011B  
MB84066B  
MC14001BCP  
MC14011BCP  
MC14023BCP  
MC14069BCP  
MC14071BCP  
MC14073BCP  
MC14081BCP  
MC1496P  
MC5433  
TC4001BP  
TC4011BP  
TC4023BP  
TC4030BP  
TC4066BP  
TC4069UBP  
TC4071BP  
TC4073BP  
TC4081BP  
TC4093BP  
UA733CN  
μPC1394C  
μPD4001BC  
μPD4011BC  
μPD4023BC  
μPD4030BC  
μPD4066BC  
μPD4069UBC  
μPD4071BC  
μPD4073BC  
μPD4081BC  
μPD4093BC

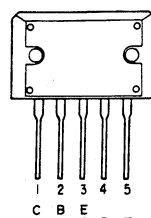


NJM7812A  
NJM7812B  
NJM78M12A  
μPC78M12H  
μPC7812H

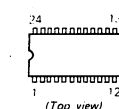


HD14027BP  
HD14040BP  
HD14053BP  
HD14175BP  
HD14520BP  
HD14538BP  
MB84027B  
MB84053B  
MC14027BCP  
MC14040BCP  
MC14053BCP  
MC14175BCP  
MC14520BCP  
TC40175BP  
TC4040BP  
TC4053BP  
TC4520BP  
TC4538BP  
TC504027BP  
TL494CN  
TL8608P  
μPD4027BC  
μPD4040BC  
μPD4053BC  
μPD4175BC  
μPD4520C  
μPD4538BC

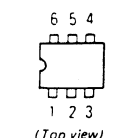
STR8124



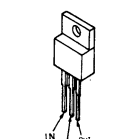
TA7193P



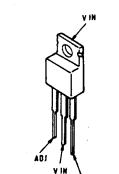
TX-429M



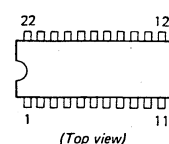
MPC78M05H



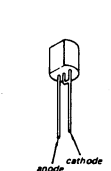
MPC79M05H



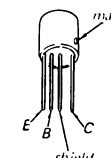
MPC1377C



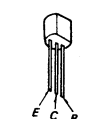
μPC574J



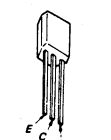
2SA109



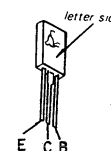
2SA1091  
2SA844  
2SA933S  
2SC1740  
2SC1890A  
2SC2551  
2SC2878  
2SC3068



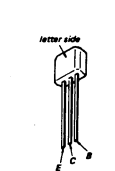
2SA1048  
2SA1115  
2SC3327  
2SC2458  
2SC2603  
2SC2668  
2SC403SP  
DTA124ES  
DTA144ES  
DTC124ES  
DTC143TS  
DTC144ES



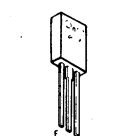
2SA1142  
2SA1156  
2SC2688  
2SC2752  
2SD669A



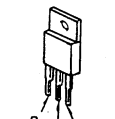
2SA1175  
2SC2785



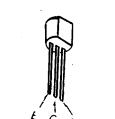
2SA1406  
2SC3600  
2SC3956



2SA473  
2SB858  
2SB860  
2SB861  
2SC1173  
2SC3675  
2SD1134  
2SD1137



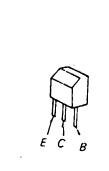
2SA893A  
2SB740  
2SC1475  
2SC2230A  
2SC2551  
2SC2910  
2SD789



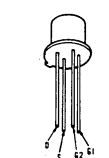
2SA979



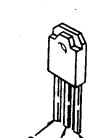
2SB734  
2SD774



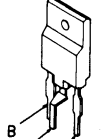
2SC2534



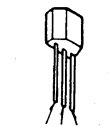
2SC2555



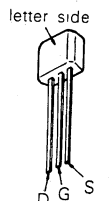
2SD1556



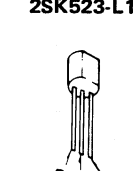
2SK381



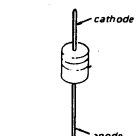
2SK514



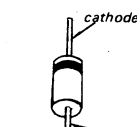
2SK523-K1  
2SK523-K2  
2SK523-L1



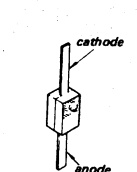
1SS119  
1SS133T  
1SS148  
RD3.0ES-B  
RD8.2ES-B2



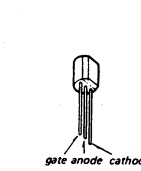
1SS83  
1S1555  
1S2076  
EQA02-06AV3  
EQA02-07DV3  
EQA02-08AV3  
EQA02-10BV3  
EQA02-11DV3  
EQA02-14BV3  
ERD28-04S  
ERD28-08S  
HZ10EB3  
HZ12EB2  
HZ12A2L  
HZ15EB3  
HZ4.3EB1  
HZ4.3EB2  
HZ4.3EB3  
HZ5.6EB2  
HZ6.2EB1  
HZ6.2EB2  
HZ6.2EB3  
HZ7.5EB2  
HZ7.5EB3  
HZ9.1EB2  
RD10EB3  
RD12EB1  
RD12EB2  
RD12EB3  
RD15EB3  
RD3.0EB1  
RD3.0EB2  
RD3.9EB2  
RD4.3EB1  
RD4.3EB2  
RD4.3EB3  
RD4.7EL1  
RD4.7EL2  
RD4.7EL3  
RD5.1ES-B  
RD5.6ES-B1  
RD5.6EB2  
RD6.2EB1  
RD6.2EB2  
RD6.2EB3  
RD7.5ESB2  
RD7.5EB3  
RD9.1EB1  
RD9.1EB2  
RD9.1EB3



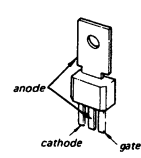
1T25



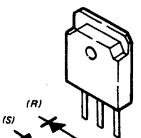
CR02AM-4  
CR02AM-8



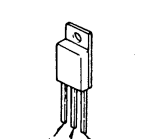
CR3CM-8



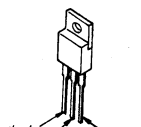
CTU-38R  
CTU-38S



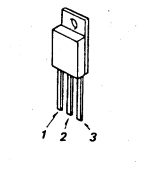
ESAC25-04C



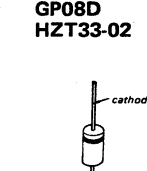
ESAC25-04N  
ESAD25-04D



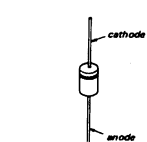
ESAC31-02D



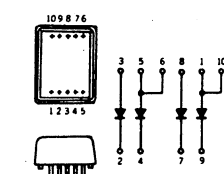
10E2  
ERB81-004  
GP08D  
HZT33-02



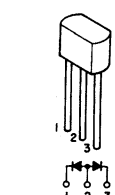
HZ12EB1  
HZ12EB3  
HZ3.0EB1  
HZ3.0EB2  
HZ3.9EB2  
HZ9.1EB1  
HZ9.1EB3



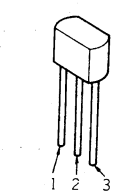
LT-9220H



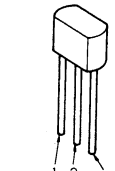
MC911



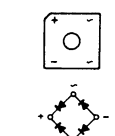
MC921



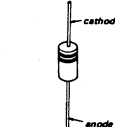
MC931



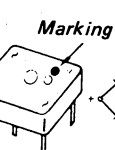
RB406NH



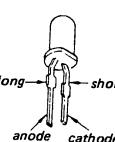
ERC24-04S  
ERC24-06S  
RH-1  
RU-1A  
SIB01-02



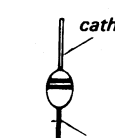
S3WB60Z



TLG124A  
TLR124  
TLY124  
TLO124



U05G  
V11N





## SECTION 6 EXPLODED VIEWS

### NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

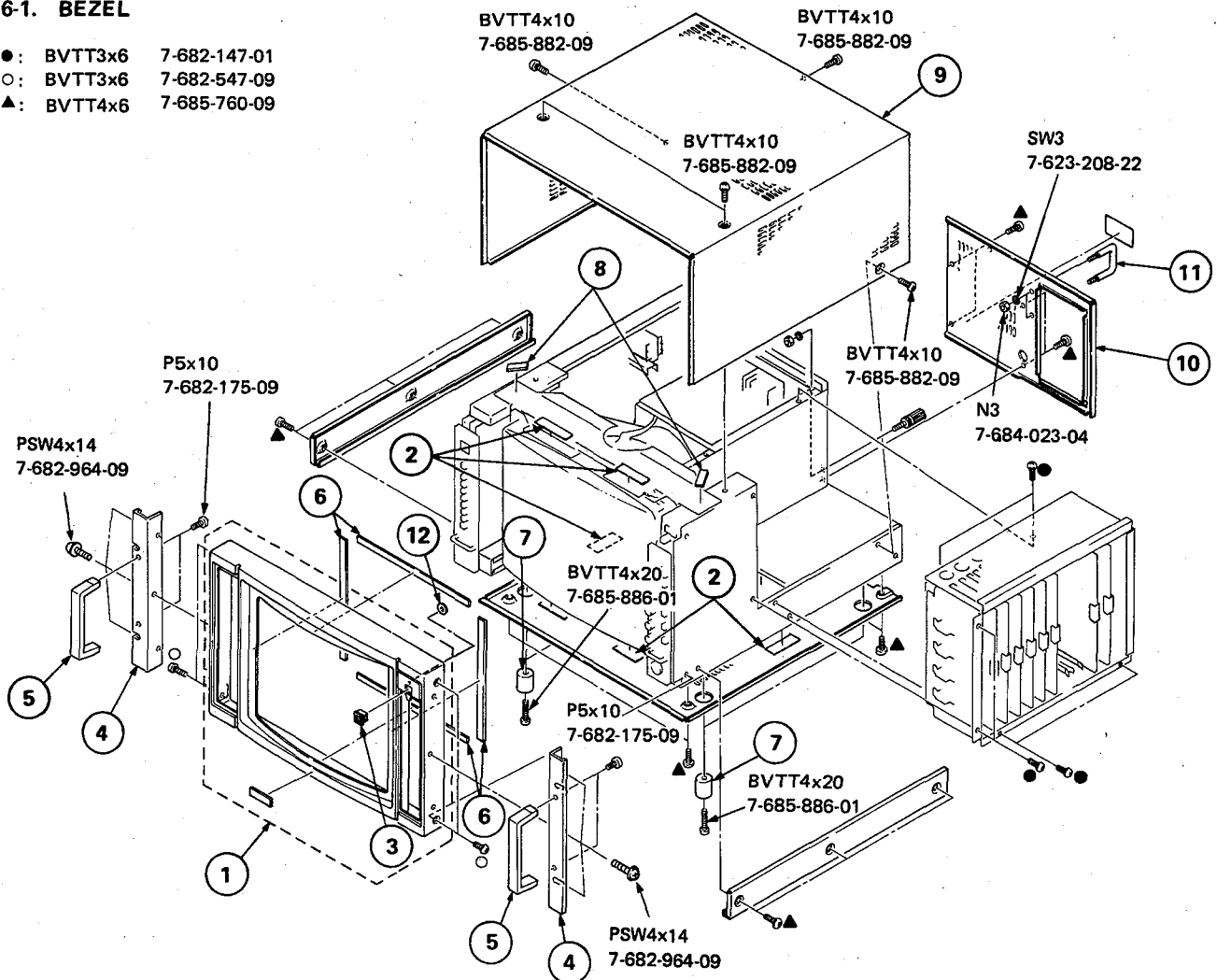
- Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark **▲** are critical for safety.  
Replace only with part number specified.

Les composants identifiés par une trame et une marque **▲** sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

### 6-1. BEZEL

- : BVTT3x6 7-682-147-01
- : BVTT3x6 7-682-547-09
- ▲: BVTT4x6 7-685-760-09



No.	Part No.	Description
1	X-4379-403-2	BEZEL ASSY
2	4-864-324-11	SPACER
3	4-379-423-01	ESCUTCHEON (A)
4	*4-391-207-01	BASE, HANDLE
5	*4-337-212-11	HANDLE
6	4-304-087-02	CUSHION, (A) PICTURE TUBE

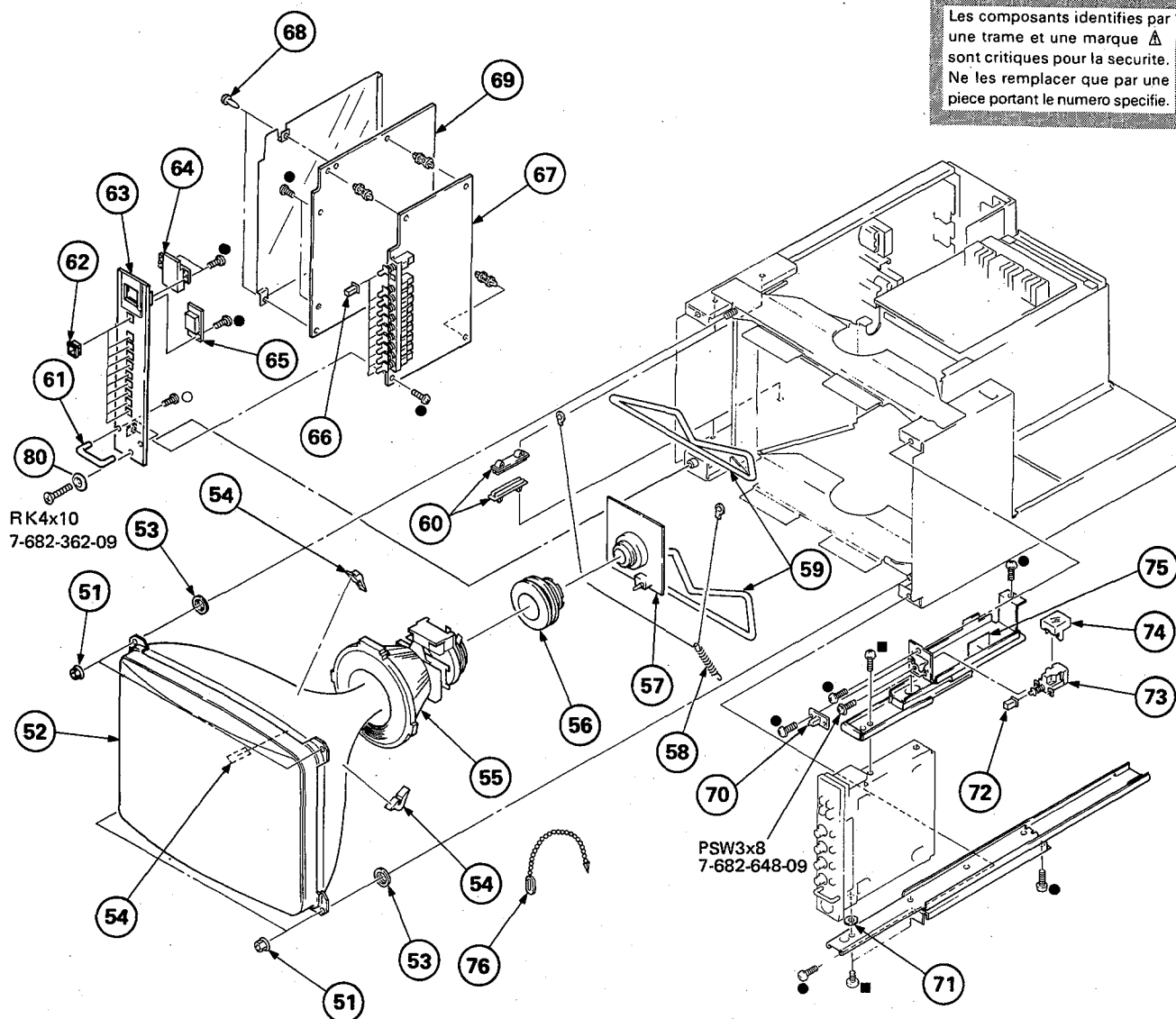
Remark	No.	Part No.	Description	Remark
3	7	3-642-656-01	FOOT	
	8	2-532-835-00	DAMPER, CASE (LOWER)	
	9	*4-379-461-01	CABINET	
	10	*4-379-450-01	COVER, BACK	
	11	*4-379-476-01	PROTECTOR, CONNECTOR	
	12	*4-309-378-00	SPACER	

## 6-2. PICTURE TUBE

- : BVTT3x6 7-682-147-01
- : BVTT3x6 7-682-547-09
- : B4x6 7-682-560-04

The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

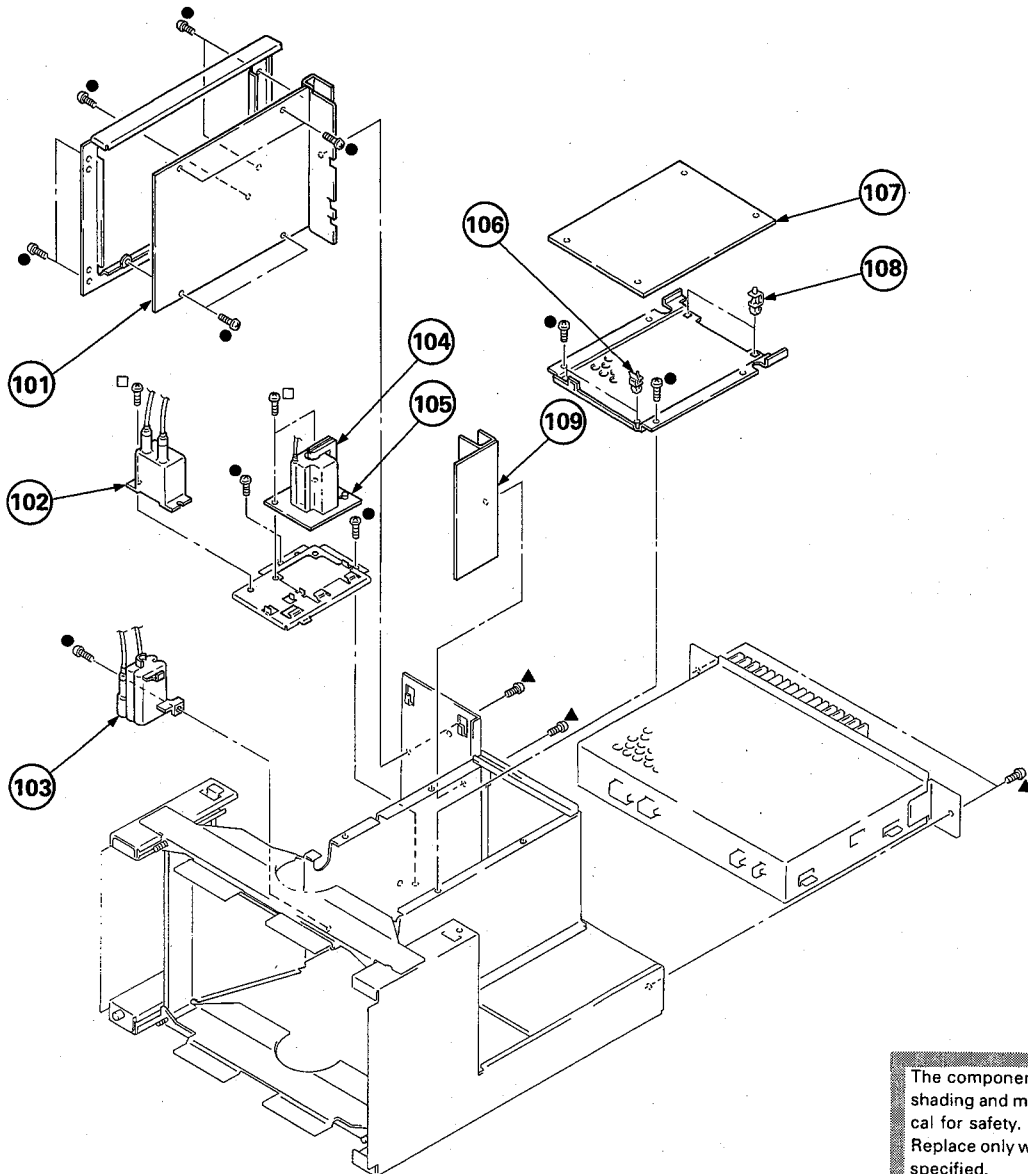


No.	Part No.	Description	Remark
51	4-306-034-00	FLANGE NUT, (B) 5MM	
52	8-734-521-05	PICTURE TUBE (M34KBE21X) (BVM-1415P, BVM-1415PM ONLY)	
	8-734-721-05	PICTURE TUBE (M34KBE20X)(BVM-1315 ONLY)	
53	4-348-567-00	WASHER, PICTURE TUBE POSITION	
54	3-703-961-01	SPACER, DY	
55	$\Delta$ 1-451-329-11	DEFLECTION YOKE (SY-222)	
56	$\Delta$ 1-452-436-11	NECK ASSY, CRT (NA292)	
57	*A-1330-902-A	C BOARD, COMPLETE	
58	4-303-774-XX	SPRING	
59	$\Delta$ 1-426-263-11	COIL, DEMAGNETIZATION	
60	*3-680-613-01	SUPPORT, PC BOARD	
61	4-379-421-01	HANDLE, DRAWER	
62	4-379-423-01	ESCUTCHEON (A)	
63	4-391-218-01	PANEL (L), CONTROL	
64	4-379-418-01	COVER, LAMP	

No.	Part No.	Description	Remark
65	*1-627-676-11	X BOARD	
66	4-374-839-01	BUTTON (A)	
67	*1-627-675-11	HA BOARD	
68	*4-302-557-11	CLIP	
69	*A-1345-801-A	D BOARD, COMPLETE	
70	*1-627-671-11	Y BOARD	
71	4-866-147-11	SPACER	
72	4-374-839-11	BUTTON (A)	
73	$\Delta$ 1-570-052-12	SWITCH, PUSH (AC POWER)(1 KEY)	
74	4-373-038-01	COVER, SWITCH, POWER	
75	*3-327-655-01	CUSHION, CONTROL BUTTON	
76	4-308-870-00	CLIP, LEAD WIRE	
80	3-703-225-11	WASHER	

### 6-3. CHASSIS

- : BVTT3x6 7-682-147-01
- : BVTT3x10 7-682-549-04
- ▲: BVTT4x6 7-685-760-09



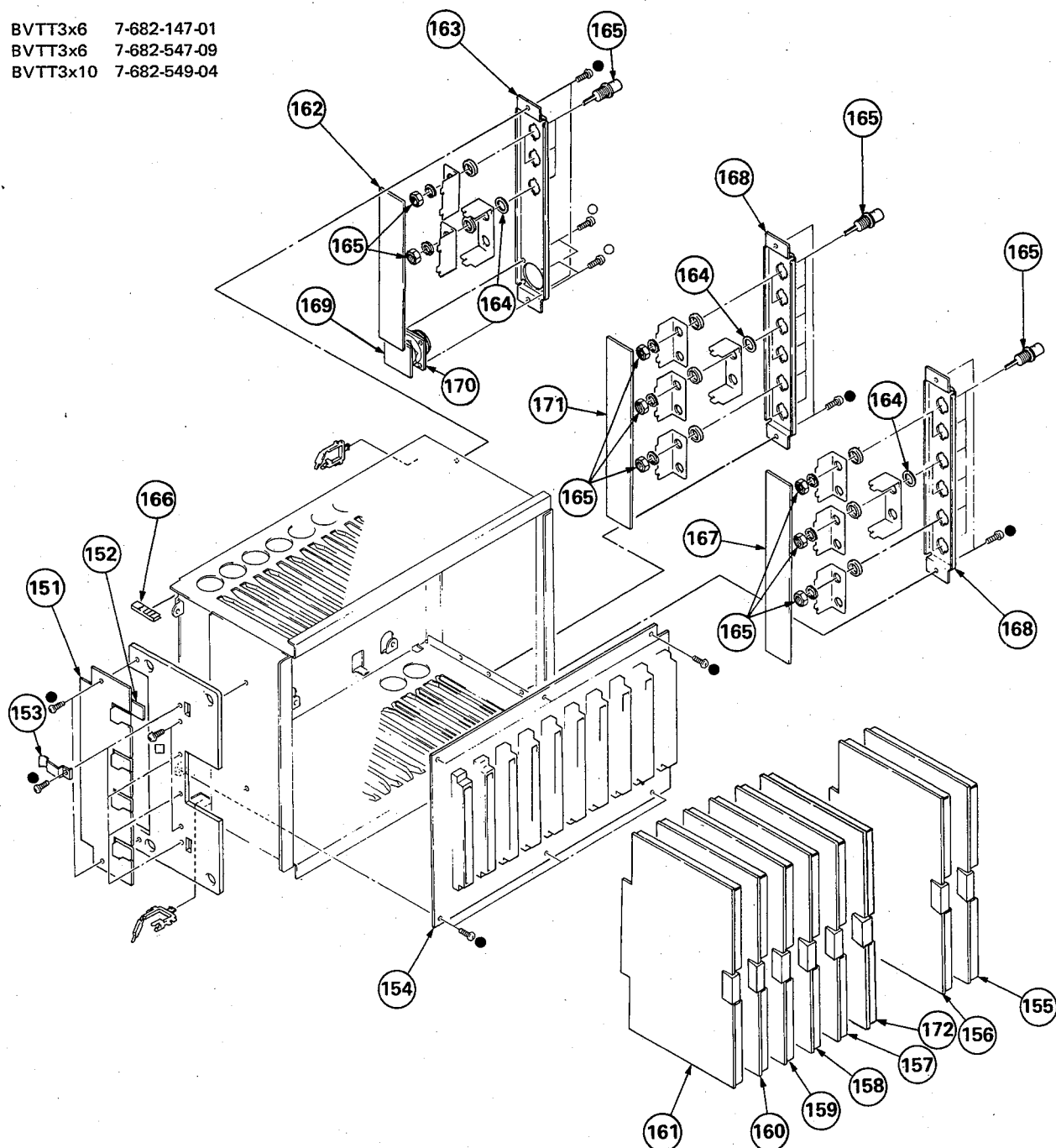
The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
101	*A-1345-802-A	EA BOARD, COMPLETE		106	*3-703-141-00	HOLDER, PCB	
102	▲ 1-162-142-21	CAP BLOCK, HIGH VOLTAGE		107	*A-1135-523-A	BK BOARD, COMPLETE	
103	▲ 1-238-301-11	RESISTOR ASSY, HIGH-VOLTAGE		108	*4-353-620-02	HINGE, PC BOARD	
104	▲ 1-439-395-11	TRANSFORMER ASSY, FLYBACK		109	*A-1345-800-A	EB BOARD, COMPLETE	
105	*1-627-670-11	P BOARD					

## 6-4. SIGNAL BLOCK

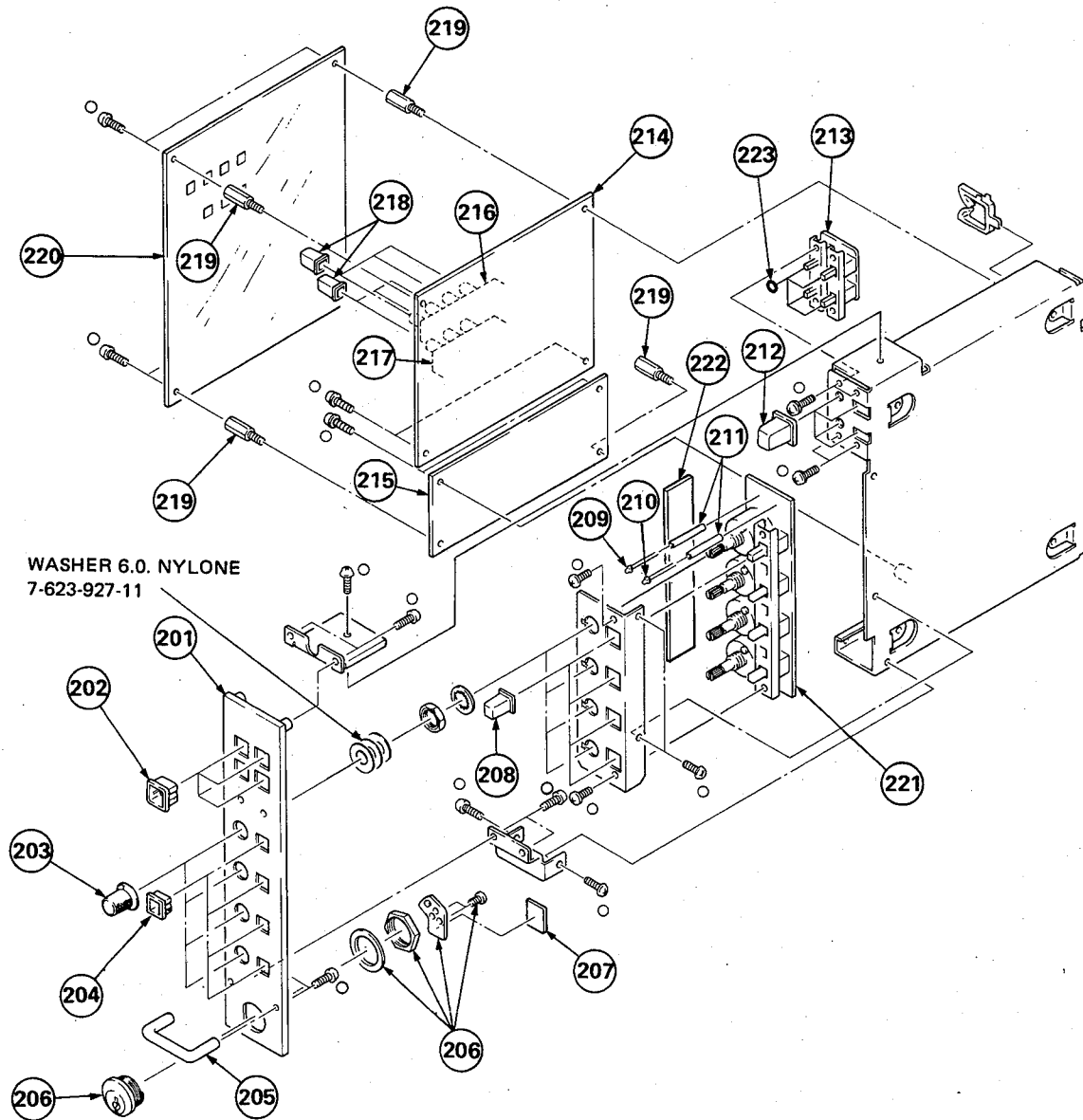
- : BVTT3x6 7-682-147-01
- : BVTT3x6 7-682-547-09
- : BVTT3x10 7-682-549-04



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
151	*1-617-885-11	GC BOARD		162	*1-627-678-11	W BOARD	
152	4-370-970-01	SPACER, TR		163	*4-391-220-01	PANEL (C), CONNECTOR	
153	*4-363-404-00	HOLDER, IC		164	*4-379-404-01	INSULATOR, BNC	
154	*1-617-899-11	TB BOARD		165	1-565-791-11	CONNECTOR, BNC 1P	
155	*A-1135-355-A	BA BOARD, COMPLETE		166	*4-911-234-01	EDGING	
156	*A-1135-356-A	BB BOARD, COMPLETE (BVM-1315 ONLY)		167	*1-617-895-11	QA BOARD	
157	*A-1135-357-A	BC BOARD, COMPLETE (BVM-1315 ONLY)		168	*4-379-439-01	PANEL (A), CONNECTOR	
158	*A-1135-537-A	BG BOARD, COMPLETE		169	*1-627-677-11	V BOARD	
159	*A-1135-359-A	BH BOARD, COMPLETE		170	1-563-265-11	CONNECTOR, MULTIPLE 10P	
160	*A-1135-522-A	BI BOARD, COMPLETE		171	*1-618-786-11	QB BOARD	
161	*A-1135-361-A	BJ BOARD, COMPLETE		172	*A-1135-391-A	BD BOARD, COMPLETE (BVM-1415P ONLY)	
					*A-1135-424-A	BM BOARD COMPLETE (BVM-1415PM ONLY)	

## 6-5. DRAWER BLOCK (RIGHT)


○: BVTT3x6 7-682-547-09



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
201	4-379-453-11	PANEL (RIGHT), CONTROL		213	*1-617-887-11	HC BOARD	
202	4-379-423-01	ESCUTCHEON (A)		214	*1-627-680-11	HB BOARD	
203	X-3673-635-0	KNOB (1) ASSY, CONTROL		215	*1-618-814-11	HE BOARD	
204	4-379-424-01	ESCUTCHEON (B)		216	1-570-568-11	SWITCH, PUSH (4 KEY)	
205	4-379-421-01	HANDLE, DRAWER		217	1-570-569-11	SWITCH, PUSH (3 KEY)	
206	4-378-917-01	LOCK, CYLINDER		218	4-369-627-11	PUSH BUTTON	
207	4-337-209-11	PROTECTOR, SCRATCH		219	*2-264-136-00	SUPPORT, SWITCH, PUSH BUTTON	
208	4-379-422-01	BUTTON (B)		220	*4-379-475-01	COVER, HB PC BOARD	
209	8-719-812-41	DIODE TLR124		221	*1-627-681-11	HG BOARD	
210	8-719-812-42	DIODE TLY124		222	*1-627-682-11	HH BOARD	
211	*4-026-910-00	HOLDER, LED		223	3-672-251-00	RING (M4), 0	
212	4-374-839-01	BUTTON (A)					

## 6. EXPLODED VIEWS

[illegible]

Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

6-6





7. ELECTRICAL PARTS LIST

7-2

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
<b>RESISTOR</b>				R410	1-249-405-11	CARBON	
R1	1-249-405-11	CARBON	100 5% 1/4W	R411	1-215-431-00	METAL	100 5% 1/4W
R2	1-249-405-11	CARBON	100 5% 1/4W	R412	1-249-421-11	CARBON	2.7K 1% 1/6W
R3	1-249-405-11	CARBON	100 5% 1/4W	R413	1-249-393-11	CARBON	2.2K 5% 1/4W
R4	1-249-437-11	CARBON	47K 5% 1/4W	R501	1-249-417-11	CARBON	10 5% 1/4W
R5	1-249-405-11	CARBON	100 5% 1/4W	R502	1-249-417-11	CARBON	1K 5% 1/4W
R6	1-249-432-11	CARBON	18K 5% 1/4W	R503	1-249-418-11	CARBON	1.2K 5% 1/4W
R7	1-249-434-11	CARBON	27K 5% 1/4W	R504	1-249-425-11	CARBON	4.7K 5% 1/4W
R8	1-249-437-11	CARBON	2.7K 5% 1/4W	R505	1-249-405-11	CARBON	100 5% 1/4W
R9	1-249-405-11	CARBON	100 5% 1/4W	R506	1-215-437-00	METAL	4.7K 1% 1/6W
R10	1-249-405-11	CARBON	100 5% 1/4W	R507	1-249-430-11	CARBON	12K 5% 1/4W
R11	1-249-433-11	CARBON	22K 5% 1/4W	R508	1-249-433-11	CARBON	22K 5% 1/4W
R12	1-249-405-11	CARBON	400 5% 1/4W	R509	1-215-427-00	METAL	1.8K 1% 1/6W
R13	1-249-437-11	CARBON	47K 5% 1/4W	R510	1-215-415-00	METAL	560 1% 1/6W
R14	1-249-429-11	CARBON	10K 5% 1/4W	R511	1-249-405-11	CARBON	100 5% 1/4W
R101	1-249-417-11	CARBON	1K 5% 1/4W	R512	1-215-431-00	METAL	2.7K 1% 1/6W
R102	1-249-418-11	CARBON	1.2K 5% 1/4W	R513	1-249-421-11	CARBON	2.2K 5% 1/4W
R103	1-249-425-11	CARBON	4.7K 5% 1/4W	R514	1-249-393-11	CARBON	10 5% 1/4W
R104	1-249-405-11	CARBON	100 5% 1/4W	R601	1-249-417-11	CARBON	1K 5% 1/4W
R105	1-215-437-00	METAL	4.7K 1% 1/6W	R602	1-249-418-11	CARBON	1.2K 5% 1/4W
R106	1-249-430-11	CARBON	12K 5% 1/4W	R603	1-249-425-11	CARBON	4.7K 5% 1/4W
R107	1-249-433-11	CARBON	22K 5% 1/4W	R604	1-249-405-11	CARBON	100 5% 1/4W
R108	1-215-427-00	METAL	1.8K 1% 1/6W	R605	1-215-437-00	METAL	4.7K 1% 1/6W
R109	1-215-415-00	METAL	560 1% 1/6W	R606	1-249-430-11	CARBON	12K 5% 1/4W
R110	1-249-405-11	CARBON	100 5% 1/4W	R607	1-249-433-11	CARBON	22K 5% 1/4W
R111	1-215-431-00	METAL	2.7K 1% 1/6W	R608	1-215-427-00	METAL	1.8K 1% 1/6W
R112	1-249-421-11	CARBON	2.2K 5% 1/4W	R609	1-215-415-00	METAL	560 1% 1/6W
R113	1-249-393-11	CARBON	10 5% 1/4W	R610	1-249-405-11	CARBON	100 5% 1/4W
R201	1-249-417-11	CARBON	1K 5% 1/4W	R611	1-215-431-00	METAL	2.7K 1% 1/6W
R202	1-249-418-11	CARBON	1.2K 5% 1/4W	R612	1-249-421-11	CARBON	2.2K 5% 1/4W
R203	1-249-425-11	CARBON	4.7K 5% 1/4W	R613	1-249-393-11	CARBON	10 5% 1/4W
R204	1-249-405-11	CARBON	100 5% 1/4W	R701	1-249-433-11	CARBON	22K 5% 1/4W
R205	1-215-437-00	METAL	4.7K 1% 1/6W	R702	1-249-438-11	CARBON	56K 5% 1/4W
R206	1-249-430-11	CARBON	12K 5% 1/4W	R703	1-249-417-11	CARBON	1K 5% 1/4W
R207	1-249-433-11	CARBON	22K 5% 1/4W	R704	1-249-417-11	CARBON	1K 5% 1/4W
R208	1-215-427-00	METAL	1.8K 1% 1/6W	R705	1-249-424-11	CARBON	3.9K 5% 1/4W
R209	1-215-415-00	METAL	560 1% 1/6W	R706	1-249-417-11	CARBON	1K 5% 1/4W
R210	1-249-405-11	CARBON	100 5% 1/4W	R707	1-249-429-11	CARBON	10K 5% 1/4W
R211	1-215-431-00	METAL	2.7K 1% 1/6W	R708	1-249-421-11	CARBON	2.2K 5% 1/4W
R212	1-249-421-11	CARBON	2.2K 5% 1/4W	R709	1-249-419-11	CARBON	1.5K 5% 1/4W
R213	1-249-393-11	CARBON	10 5% 1/4W	R710	1-249-418-11	CARBON	1.2K 5% 1/4W
R301	1-249-417-11	CARBON	1K 5% 1/4W	R711	1-249-434-11	CARBON	27K 5% 1/4W
R302	1-249-418-11	CARBON	1.2K 5% 1/4W	R712	1-249-433-11	CARBON	22K 5% 1/4W
R303	1-249-426-11	CARBON	5.6K 5% 1/4W	R713	1-249-422-11	CARBON	2.7K 5% 1/4W
R304	1-249-405-11	CARBON	100 5% 1/4W	R714	1-249-427-11	CARBON	6.8K 5% 1/4W
R305	1-249-426-11	CARBON	5.6K 5% 1/4W	R715	1-249-433-11	CARBON	22K 5% 1/4W
R306	1-249-430-11	CARBON	12K 5% 1/4W	R716	1-249-422-11	CARBON	2.7K 5% 1/4W
R307	1-249-432-11	CARBON	18K 5% 1/4W	R717	1-249-425-11	CARBON	4.7K 5% 1/4W
R308	1-249-421-11	CARBON	2.2K 5% 1/4W	R718	1-249-410-11	CARBON	270 5% 1/4W
R309	1-249-417-11	CARBON	1K 5% 1/4W	R719	1-249-414-11	CARBON	560 5% 1/4W
R310	1-249-405-11	CARBON	100 5% 1/4W	R720	1-247-850-11	CARBON	6.2K 5% 1/4W
R311	1-249-417-11	CARBON	1K 5% 1/4W	R721	1-249-438-11	CARBON	56K 5% 1/4W
R312	1-249-421-11	CARBON	2.2K 5% 1/4W	R722	1-249-441-11	CARBON	100K 5% 1/4W
R313	1-249-393-11	CARBON	10 5% 1/4W	R723	1-249-437-11	CARBON	47K 5% 1/4W
R401	1-249-417-11	CARBON	1K 5% 1/4W	R724	1-249-429-11	CARBON	10K 5% 1/4W
R402	1-249-418-11	CARBON	1.2K 5% 1/4W	R725	1-249-438-11	CARBON	56K 5% 1/4W
R403	1-249-425-11	CARBON	4.7K 5% 1/4W	R726	1-247-895-00	CARBON	470K 5% 1/4W
R404	1-249-405-11	CARBON	100 5% 1/4W	R727	1-249-425-11	CARBON	4.7K 5% 1/4W
R405	1-215-437-00	METAL	4.7K 1% 1/6W	R728	1-249-435-11	CARBON	33K 5% 1/4W
R406	1-249-430-11	CARBON	12K 5% 1/4W	R729	1-249-423-11	CARBON	3.3K 5% 1/4W
R407	1-249-433-11	CARBON	22K 5% 1/4W	R730	1-249-421-11	CARBON	2.2K 5% 1/4W
R408	1-215-427-00	METAL	1.8K 1% 1/6W	R731	1-249-422-11	CARBON	2.7K 5% 1/4W
R409	1-215-415-00	METAL	560 1% 1/6W	R732	1-249-422-11	CARBON	2.7K 5% 1/4W
				R733	1-249-421-11	CARBON	2.2K 5% 1/4W
				R734	1-249-421-11	CARBON	2.2K 5% 1/4W
				R735	1-249-421-11	CARBON	2.2K 5% 1/4W

BA

BB

Ref.No.	Part No.	Description	Remark
R736	1-249-425-11	CARBON 4.7K 5% 1/4W	
R737	1-249-405-11	CARBON 100 5% 1/4W	
R738	1-249-441-11	CARBON 100K 5% 1/4W	
R739	1-249-433-11	CARBON 22K 5% 1/4W	
R740	1-249-417-11	CARBON 1K 5% 1/4W	
R741	1-202-473-00	SOLID 5.6M 5% 1/4W	

#### VARIABLE RESISTOR

RV101	1-237-514-21	RES, ADJ, CERMET 500	
RV201	1-237-514-21	RES, ADJ, CERMET 500	
RV401	1-237-514-21	RES, ADJ, CERMET 500	
RV501	1-237-514-21	RES, ADJ, CERMET 500	
RV601	1-237-514-21	RES, ADJ, CERMET 500	

\*\*\*\*\*

\*A-1135-356-A BB BOARD, COMPLETE (BVM-1315 ONLY)  
\*\*\*\*\*

\*4-353-708-00 HOOK, FINGER

#### CAPACITOR

C1	1-123-332-00	ELECT 47MF	20%	16V
C2	1-102-506-00	CERAMIC 7PF	0.5PF	50V
C3	1-101-004-00	CERAMIC 0.01MF		50V
C4	1-102-965-00	CERAMIC 39PF	5%	50V
C5	1-102-506-00	CERAMIC 7PF	0.5PF	50V
C6	1-101-004-00	CERAMIC 0.01MF		50V
C7	1-101-004-00	CERAMIC 0.01MF		50V
C8	1-101-004-00	CERAMIC 0.01MF		50V
C9	1-101-004-00	CERAMIC 0.01MF		50V
C11	1-123-330-00	ELECT 22MF	20%	16V
C12	1-101-004-00	CERAMIC 0.01MF		50V
C13	1-101-004-00	CERAMIC 0.01MF		50V
C14	1-102-666-00	CERAMIC 12PF	5%	50V
C15	1-101-361-00	CERAMIC 39PF	5%	50V
C16	1-102-666-00	CERAMIC 12PF	5%	50V
C17	1-102-884-00	CERAMIC 33PF	5%	50V
C18	1-101-004-00	CERAMIC 0.01MF		50V
C19	1-101-004-00	CERAMIC 0.01MF		50V
C20	1-102-506-00	CERAMIC 7PF	0.5PF	50V
C22	1-101-004-00	CERAMIC 0.01MF		50V
C23	1-101-004-00	CERAMIC 0.01MF		50V
C24	1-102-959-00	CERAMIC 22PF	5%	50V
C26	1-101-004-00	CERAMIC 0.01MF		50V
C27	1-101-004-00	CERAMIC 0.01MF		50V
C28	1-101-880-00	CERAMIC 47PF	5%	50V
C29	1-124-963-11	ELECT 33MF	20%	16V
C30	1-101-004-00	CERAMIC 0.01MF		50V
C101	1-101-884-00	CERAMIC 56PF	5%	50V
C102	1-101-884-00	CERAMIC 56PF	5%	50V
C103	1-101-884-00	CERAMIC 56PF	5%	50V
C104	1-101-004-00	CERAMIC 0.01MF		50V
C105	1-102-971-00	CERAMIC 82PF	5%	50V
C106	1-101-004-00	CERAMIC 0.01MF		50V
C108	1-101-004-00	CERAMIC 0.01MF		50V
C109	1-102-965-00	CERAMIC 39PF	5%	50V
C110	1-102-947-00	CERAMIC 10PF	0.5PF	50V
C151	1-124-963-11	ELECT 33MF	20%	16V
C152	1-101-004-00	CERAMIC 0.01MF		50V
C161	1-124-963-11	ELECT 33MF	20%	16V
C162	1-101-004-00	CERAMIC 0.01MF		50V
C163	1-101-004-00	CERAMIC 0.01MF		50V
C201	1-124-963-11	ELECT 33MF	20%	16V

Ref.No.	Part No.	Description	Remark
C202	1-101-004-00	CERAMIC 0.01MF	50V
C203	1-123-343-00	ELECT 33MF	20% 25V
C204	1-124-963-11	ELECT 33MF	20% 16V
C205	1-101-004-00	CERAMIC 0.01MF	50V
C206	1-123-343-00	ELECT 33MF	20% 25V
C207	1-101-004-00	CERAMIC 0.01MF	50V
C208	1-123-330-00	ELECT 22MF	20% 25V
C211	1-124-963-11	ELECT 33MF	20% 16V
C212	1-101-004-00	CERAMIC 0.01MF	50V
C213	1-124-963-11	ELECT 33MF	20% 16V
C214	1-101-004-00	CERAMIC 0.01MF	50V
C221	1-124-963-11	ELECT 33MF	20% 16V
C222	1-124-963-11	ELECT 33MF	20% 16V
C223	1-124-963-11	ELECT 33MF	20% 16V
C224	1-124-963-11	ELECT 33MF	20% 16V

C231	1-101-004-00	CERAMIC 0.01MF	50V
C232	1-101-004-00	CERAMIC 0.01MF	50V
C233	1-101-004-00	CERAMIC 0.01MF	50V
C234	1-101-004-00	CERAMIC 0.01MF	50V
C235	1-101-004-00	CERAMIC 0.01MF	50V
C236	1-101-004-00	CERAMIC 0.01MF	50V
C241	1-124-963-11	ELECT 33MF	20% 16V
C242	1-124-963-11	ELECT 33MF	20% 16V
C243	1-124-963-11	ELECT 33MF	20% 16V
C244	1-124-963-11	ELECT 33MF	20% 16V
C245	1-124-963-11	ELECT 33MF	20% 16V
C251	1-101-004-00	CERAMIC 0.01MF	50V
C252	1-101-004-00	CERAMIC 0.01MF	50V
C253	1-101-004-00	CERAMIC 0.01MF	50V
C254	1-101-004-00	CERAMIC 0.01MF	50V
C255	1-101-004-00	CERAMIC 0.01MF	50V

#### TRIMMER

CV1	1-141-181-11	CAP, TRIMMER	
CV2	1-141-181-11	CAP, TRIMMER	
CV101	1-141-181-11	CAP, TRIMMER	

#### DIODE

D1	8-719-911-19	DIODE 1SS119	
D2	8-719-110-08	DIODE RD8.2ES-B2	
D3	8-719-109-88	DIODE RD5.6ES-B1	
D4	8-719-911-19	DIODE 1SS119	
D5	8-719-911-19	DIODE 1SS119	

#### DELAY LINE

DL1	1-415-348-11	DELAY LINE	
DL2	1-415-379-21	DELAY LINE, 1H	
DL3	1-415-477-11	DELAY LINE	

#### IC

IC1	8-759-014-96	IC MC1496P	
IC2	8-759-907-33	IC UA733CN	
IC3	8-759-014-96	IC MC1496P	

#### COIL

L1	1-408-421-00	INDUCTOR 100UH	
L2	1-408-529-00	COIL, VARIABLE	
L3	1-408-429-00	INDUCTOR 470UH	
L4	1-408-421-00	INDUCTOR 100UH	
L5	1-408-417-00	INDUCTOR 47UH	

BB

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
L6	1-408-417-00	INDUCTOR 47UH		R22	1-249-422-11	CARBON 2.7K 5% 1/4W	
L101	1-408-529-00	COIL, VARIABLE		R23	1-249-437-11	CARBON 47K 5% 1/4W	
L102	1-408-429-00	INDUCTOR 470UH		R24	1-249-433-11	CARBON 22K 5% 1/4W	
L103	1-408-409-00	INDUCTOR 10UH		R25	1-249-405-11	CARBON 100 5% 1/4W	
				R26	1-215-421-00	METAL 1K 1% 1/6W	
		TRANSISTOR		R27	1-215-421-00	METAL 1K 1% 1/6W	
Q1	8-729-384-48	TRANSISTOR 2SA844		R28	1-215-397-00	METAL 100 1% 1/6W	
Q2	8-729-600-24	TRANSISTOR 2SC403SP-51		R29	1-249-405-11	CARBON 100 5% 1/4W	
Q3	8-729-384-48	TRANSISTOR 2SA844		R30	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q4	8-729-384-48	TRANSISTOR 2SA844		R31	1-249-405-11	CARBON 100 5% 1/4W	
Q5	8-729-384-48	TRANSISTOR 2SA844		R34	1-215-401-11	METAL 150 1% 1/6W	
Q6	8-729-600-24	TRANSISTOR 2SC403SP-51		R35	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q7	8-729-384-48	TRANSISTOR 2SA844		R36	1-249-405-11	CARBON 100 5% 1/4W	
Q8	8-729-384-48	TRANSISTOR 2SA844		R37	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q9	8-729-600-24	TRANSISTOR 2SC403SP-51		R38	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q10	8-729-600-24	TRANSISTOR 2SC403SP-51		R39	1-215-401-11	METAL 150 1% 1/6W	
Q11	8-729-600-24	TRANSISTOR 2SC403SP-51		R40	1-215-394-00	METAL 75 1% 1/6W	
Q12	8-729-600-24	TRANSISTOR 2SC403SP-51		R41	1-215-394-00	METAL 75 1% 1/6W	
Q13	8-729-384-48	TRANSISTOR 2SA844		R42	1-249-433-11	CARBON 22K 5% 1/4W	
Q14	8-729-600-24	TRANSISTOR 2SC403SP-51		R43	1-249-433-11	CARBON 22K 5% 1/4W	
Q15	8-729-800-10	TRANSISTOR 2SC3068		R44	1-249-405-11	CARBON 100 5% 1/4W	
Q16	8-729-384-48	TRANSISTOR 2SA844		R45	1-249-405-11	CARBON 100 5% 1/4W	
Q17	8-729-600-24	TRANSISTOR 2SC403SP-51		R46	1-215-373-31	METAL 10 1% 1/6W	
Q18	8-729-384-48	TRANSISTOR 2SA844		R47	1-249-405-11	CARBON 100 5% 1/4W	
Q19	8-729-384-48	TRANSISTOR 2SA844		R48	1-249-405-11	CARBON 100 5% 1/4W	
Q20	8-729-600-24	TRANSISTOR 2SC403SP-51		R49	1-215-421-00	METAL 1K 1% 1/6W	
Q21	8-729-600-24	TRANSISTOR 2SC403SP-51		R50	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q22	8-729-600-24	TRANSISTOR 2SC403SP-51		R51	1-249-405-11	CARBON 100 5% 1/4W	
Q23	8-729-800-10	TRANSISTOR 2SC3068		R52	1-215-415-00	METAL 560 1% 1/6W	
Q24	8-729-600-24	TRANSISTOR 2SC403SP-51		R53	1-215-419-00	METAL 820 1% 1/6W	
Q101	8-729-600-24	TRANSISTOR 2SC403SP-51		R54	1-249-405-11	CARBON 100 5% 1/4W	
Q102	8-729-600-24	TRANSISTOR 2SC403SP-51		R55	1-215-415-00	METAL 560 1% 1/6W	
Q103	8-729-600-24	TRANSISTOR 2SC403SP-51		R56	1-249-429-11	CARBON 10K 5% 1/4W	
Q104	8-729-600-24	TRANSISTOR 2SC403SP-51		R57	1-249-405-11	CARBON 100 5% 1/4W	
Q105	8-729-600-24	TRANSISTOR 2SC403SP-51		R58	1-215-421-00	METAL 1K 1% 1/6W	
Q106	8-729-384-48	TRANSISTOR 2SA844		R59	1-215-423-00	METAL 1.2K 1% 1/6W	
Q201	8-729-103-43	TRANSISTOR 2SB734		R60	1-215-423-00	METAL 1.2K 1% 1/6W	
Q202	8-729-177-43	TRANSISTOR 2SD774		R61	1-249-405-11	CARBON 100 5% 1/4W	
Q203	8-729-900-63	TRANSISTOR DTA124ES		R62	1-215-413-00	METAL 470 1% 1/6W	
Q204	8-729-900-89	TRANSISTOR DTC144ES		R63	1-249-405-11	CARBON 100 5% 1/4W	
		RESISTOR		R64	1-215-421-00	METAL 1K 1% 1/6W	
R1	1-249-429-11	CARBON 10K 5% 1/4W		R65	1-215-421-00	METAL 1K 1% 1/6W	
R2	1-249-427-11	CARBON 6.8K 5% 1/4W		R66	1-215-405-00	METAL 220 1% 1/6W	
R3	1-249-429-11	CARBON 10K 5% 1/4W		R67	1-249-405-11	CARBON 100 5% 1/4W	
R4	1-249-433-11	CARBON 22K 5% 1/4W		R68	1-249-425-11	CARBON 4.7K 5% 1/4W	
R5	1-249-419-11	CARBON 1.5K 5% 1/4W		R69	1-249-405-11	CARBON 100 5% 1/4W	
R6	1-249-417-11	CARBON 1K 5% 1/4W		R70	1-249-433-11	CARBON 22K 5% 1/4W	
R7	1-215-405-00	METAL 220 1% 1/6W		R71	1-249-433-11	CARBON 22K 5% 1/4W	
R8	1-215-405-00	METAL 220 1% 1/6W		R72	1-215-421-00	METAL 1K 1% 1/6W	
R9	1-215-429-00	METAL 2.2K 1% 1/6W		R73	1-215-425-00	METAL 1.5K 1% 1/6W	
R10	1-249-417-11	CARBON 1K 5% 1/4W		R74	1-249-405-11	CARBON 100 5% 1/4W	
R11	1-249-422-11	CARBON 2.7K 5% 1/4W		R76	1-249-417-11	CARBON 1K 5% 1/4W	
R12	1-215-421-00	METAL 1K 1% 1/6W		R77	1-215-433-00	METAL 3.3K 1% 1/6W	
R13	1-249-405-11	CARBON 100 5% 1/4W		R78	1-249-422-11	CARBON 2.7K 5% 1/4W	
R14	1-249-417-11	CARBON 1K 5% 1/4W		R79	1-249-405-11	CARBON 100 5% 1/4W	
R15	1-249-422-11	CARBON 2.7K 5% 1/4W		R80	1-249-422-11	CARBON 2.7K 5% 1/4W	
R16	1-215-427-00	METAL 1.8K 1% 1/6W		R81	1-215-421-00	METAL 1K 1% 1/6W	
R17	1-249-429-11	CARBON 10K 5% 1/4W		R82	1-249-405-11	CARBON 100 5% 1/4W	
R18	1-249-417-11	CARBON 1K 5% 1/4W		R84	1-249-417-11	CARBON 1K 5% 1/4W	
R19	1-215-417-00	METAL 680 1% 1/6W		R85	1-215-415-00	METAL 560 1% 1/6W	
R20	1-249-422-11	CARBON 2.7K 5% 1/4W		R86	1-249-413-11	CARBON 470 5% 1/4W	
R21	1-249-405-11	CARBON 100 5% 1/4W		R87	1-249-405-11	CARBON 100 5% 1/4W	
				R88	1-215-421-00	METAL 1K 1% 1/6W	
				R89	1-215-421-00	METAL 1K 1% 1/6W	
				R92	1-249-422-11	CARBON 2.7K 5% 1/4W	

7. ELECTRICAL PARTS LIST

BB

BC

Ref.No.	Part No.	Description	Remark			Ref.No.	Part No.	Description	Remark		
R93	1-249-432-11	CARBON	18K	5%	1/4W	C4	1-101-880-00	CERAMIC	47PF	5%	50V
R94	1-249-433-11	CARBON	22K	5%	1/4W	C5	1-102-965-00	CERAMIC	39PF	5%	50V
R96	1-249-429-11	CARBON	10K	5%	1/4W	C6	1-101-004-00	CERAMIC	0.01MF		50V
R97	1-249-421-11	CARBON	2.2K	5%	1/4W	C7	1-102-935-00	CERAMIC	2PF	0.25PF	50V
R98	1-215-409-00	METAL	330	1%	1/6W	C8	1-101-361-00	CERAMIC	39PF	5%	50V
R99	1-215-380-00	METAL	20	1%	1/6W	C9	1-123-356-00	ELECT	10MF	20%	16V
R101	1-249-437-11	CARBON	47K	5%	1/4W	C10	1-123-356-00	ELECT	10MF	20%	16V
R102	1-249-431-11	CARBON	15K	5%	1/4W	C11	1-101-004-00	CERAMIC	0.01MF		50V
R103	1-249-405-11	CARBON	100	5%	1/4W	C12	1-101-004-00	CERAMIC	0.01MF		50V
R104	1-249-422-11	CARBON	2.7K	5%	1/4W	C13	1-101-004-00	CERAMIC	0.01MF		50V
R105	1-249-429-11	CARBON	10K	5%	1/4W	C14	1-101-004-00	CERAMIC	0.01MF		50V
R106	1-249-429-11	CARBON	10K	5%	1/4W	C15	1-123-332-00	ELECT	47MF	20%	16V
R107	1-249-420-11	CARBON	1.8K	5%	1/4W	C16	1-123-332-00	ELECT	47MF	20%	16V
R108	1-249-405-11	CARBON	100	5%	1/4W	C17	1-124-963-11	ELECT	33MF	20%	16V
R109	1-249-425-11	CARBON	4.7K	5%	1/4W	C18	1-101-004-00	CERAMIC	0.01MF		50V
R110	1-249-429-11	CARBON	10K	5%	1/4W	C19	1-102-953-00	CERAMIC	18PF	5%	50V
R111	1-249-417-11	CARBON	1K	5%	1/4W	C20	1-102-668-00	CERAMIC	15PF	5%	50V
R112	1-249-432-11	CARBON	18K	5%	1/4W	C21	1-101-884-00	CERAMIC	56PF	5%	50V
R113	1-249-433-11	CARBON	22K	5%	1/4W	C22	1-123-369-00	ELECT	4.7MF	20%	25V
R114	1-215-421-00	METAL	1K	1%	1/6W	C23	1-136-157-00	FILM	0.022MF	5%	50V
R115	1-215-421-00	METAL	1K	1%	1/6W	C24	1-136-157-00	FILM	0.022MF	5%	50V
R117	1-249-405-11	CARBON	100	5%	1/4W	C25	1-101-004-00	CERAMIC	0.01MF		50V
R118	1-249-422-11	CARBON	2.7K	5%	1/4W	C26	1-101-004-00	CERAMIC	0.01MF		50V
R119	1-215-429-00	METAL	2.2K	1%	1/6W	C27	1-101-004-00	CERAMIC	0.01MF		50V
R151	1-249-405-11	CARBON	100	5%	1/4W	C28	1-123-379-00	ELECT	0.47MF	20%	50V
R152	1-249-424-11	CARBON	3.9K	5%	1/4W	C29	1-101-004-00	CERAMIC	0.01MF		50V
R153	1-215-409-00	METAL	330	1%	1/6W	C30	1-101-004-00	CERAMIC	0.01MF		50V
R154	1-215-380-00	METAL	20	1%	1/6W	C31	1-124-119-00	ELECT	330MF	20%	16V
R201	1-249-423-11	CARBON	3.3K	5%	1/4W	C34	1-109-676-00	MICA	130PF	1%	500V
R202	1-249-419-11	CARBON	1.5K	5%	1/4W	C35	1-109-685-00	MICA	330PF	1%	500V
R203	1-249-427-11	CARBON	6.8K	5%	1/4W	C36	1-102-960-00	CERAMIC	24PF	5%	50V
R204	1-249-422-11	CARBON	2.7K	5%	1/4W	C39	1-109-676-00	MICA	130PF	1%	500V
R205	1-249-422-11	CARBON	2.7K	5%	1/4W	C40	1-109-685-00	MICA	330PF	1%	500V
VARIABLE RESISTOR						C41	1-102-960-00	CERAMIC	24PF	5%	50V
RV1	1-237-517-21	RES, ADJ, CERMET 5K				C42	1-101-004-00	CERAMIC	0.01MF		50V
RV2	1-237-518-21	RES, ADJ, CERMET 10K				C50	1-102-942-00	CERAMIC	5PF	0.5PF	50V
RV3	1-237-516-21	RES, ADJ, CERMET 2K				C101	1-124-963-11	ELECT	33MF	20%	16V
RV4	1-237-516-21	RES, ADJ, CERMET 2K				C102	1-101-004-00	CERAMIC	0.01MF		50V
RV5	1-237-515-21	RES, ADJ, CERMET 1K				C103	1-123-343-00	ELECT	33MF	20%	25V
RV6	1-237-515-21	RES, ADJ, CERMET 1K				C104	1-124-963-11	ELECT	33MF	20%	16V
RV7	1-237-516-21	RES, ADJ, CERMET 2K				C105	1-101-004-00	CERAMIC	0.01MF		50V
RV8	1-237-516-21	RES, ADJ, CERMET 2K				C106	1-123-343-00	ELECT	33MF	20%	25V
RV9	1-237-515-21	RES, ADJ, CERMET 1K				C107	1-101-004-00	CERAMIC	0.01MF		50V
THERMISTOR						C111	1-124-963-11	ELECT	33MF	20%	16V
TH1	1-800-202-XX	THERMISTOR S-10K				C112	1-124-963-11	ELECT	33MF	20%	16V
CRYSTAL						C113	1-124-963-11	ELECT	33MF	20%	16V
X1	1-567-643-11	VIBRATOR, CRYSTAL				C116	1-101-004-00	CERAMIC	0.01MF		50V
*****						C117	1-101-004-00	CERAMIC	0.01MF		50V
*A-1135-357-A BC BOARD, COMPLETE (BVM-1315 ONLY)						C118	1-101-004-00	CERAMIC	0.01MF		50V
*****						C121	1-124-963-11	ELECT	33MF	20%	16V
*4-353-708-00 HOOK, FINGER						C122	1-124-963-11	ELECT	33MF	20%	16V
CAPACITOR						C123	1-124-963-11	ELECT	33MF	20%	16V
C1	1-102-668-00	CERAMIC	15PF	5%	50V	C126	1-101-004-00	CERAMIC	0.01MF		50V
C2	1-102-668-00	CERAMIC	15PF	5%	50V	C127	1-101-004-00	CERAMIC	0.01MF		50V
C3	1-102-947-00	CERAMIC	10PF	0.5PF	50V	C128	1-101-004-00	CERAMIC	0.01MF		50V
						C131	1-124-963-11	ELECT	33MF	20%	16V
						C132	1-124-963-11	ELECT	33MF	20%	16V
						C133	1-124-963-11	ELECT	33MF	20%	16V
						C136	1-101-004-00	CERAMIC	0.01MF		50V
						C137	1-101-004-00	CERAMIC	0.01MF		50V
						C138	1-101-004-00	CERAMIC	0.01MF		50V
						C139	1-101-004-00	CERAMIC	0.01MF		50V
						C143	1-101-004-00	CERAMIC	0.01MF		50V
						C144	1-123-330-00	ELECT	22MF	20%	25V
						C201	1-123-343-00	ELECT	33MF	20%	25V
						C202	1-101-004-00	CERAMIC	0.01MF		50V



Ref.No. Part No. Description

TRIMMER

CV1 1-141-147-XX CAP, TRIMMER  
CV2 1-141-147-XX CAP, TRIMMER

DIODE

D1 8-719-911-19 DIODE 1SS119  
D2 8-712-500-00 DIODE 1T25  
D3 8-719-911-19 DIODE 1SS119  
D4 8-719-100-54 DIODE RD9.1E-B2  
D5 8-719-911-19 DIODE 1SS119  
D6 8-719-911-19 DIODE 1SS119  
D7 8-719-911-19 DIODE 1SS119

IC

IC1 8-759-204-21 IC TA7193P  
IC2 8-752-006-10 IC CX20061  
IC3 8-759-140-53 IC UPD4053BC

COIL

L1 1-408-533-00 COIL, VARIABLE  
L2 1-408-513-00 COIL (VARIABLE)  
L3 1-408-533-00 COIL, VARIABLE  
L4 1-408-429-00 INDUCTOR 470UH  
L5 1-408-429-00 INDUCTOR 470UH  
L6 1-408-429-00 INDUCTOR 470UH

TRANSISTOR

Q1 8-729-603-50 TRANSISTOR 2SC403SP  
Q2 8-729-603-50 TRANSISTOR 2SC403SP  
Q3 8-729-603-50 TRANSISTOR 2SC403SP  
Q4 8-729-800-10 TRANSISTOR 2SC3068  
Q5 8-729-800-10 TRANSISTOR 2SC3068  
Q6 8-729-603-50 TRANSISTOR 2SC403SP  
Q7 8-729-603-50 TRANSISTOR 2SC403SP  
Q8 8-729-603-50 TRANSISTOR 2SC403SP  
Q9 8-729-384-48 TRANSISTOR 2SA844  
Q10 8-729-603-50 TRANSISTOR 2SC403SP  
Q11 8-729-384-48 TRANSISTOR 2SA844  
Q12 8-729-603-50 TRANSISTOR 2SC403SP  
Q13 8-729-384-48 TRANSISTOR 2SA844  
Q14 8-729-384-48 TRANSISTOR 2SA844  
Q15 8-729-603-50 TRANSISTOR 2SC403SP  
Q16 8-729-603-50 TRANSISTOR 2SC403SP  
Q17 8-729-603-50 TRANSISTOR 2SC403SP  
Q18 8-729-800-10 TRANSISTOR 2SC3068  
Q19 8-729-603-50 TRANSISTOR 2SC403SP  
Q20 8-729-603-50 TRANSISTOR 2SC403SP  
Q21 8-729-800-10 TRANSISTOR 2SC3068  
Q101 8-729-103-43 TRANSISTOR 2SB734  
Q103 8-729-900-63 TRANSISTOR DTA124ES  
Q104 8-729-900-63 TRANSISTOR DTA124ES

RESISTOR

R1 1-249-428-11 CARBON 8.2K 5% 1/4W  
R2 1-249-429-11 CARBON 10K 5% 1/4W  
R3 1-249-405-11 CARBON 100 5% 1/4W  
R4 1-249-422-11 CARBON 2.7K 5% 1/4W  
R5 1-215-421-00 METAL 1K 1% 1/6W

Remark

Ref.No. Part No. Description

Remark

R6 1-215-398-00 METAL 110 1% 1/6W  
R7 1-249-405-11 CARBON 100 5% 1/4W  
R8 1-215-421-00 METAL 1K 1% 1/6W  
R9 1-215-421-00 METAL 1K 1% 1/6W  
R10 1-215-423-00 METAL 1.2K 1% 1/6W  
R11 1-249-405-11 CARBON 100 5% 1/4W  
R12 1-215-425-00 METAL 1.5K 1% 1/6W  
R13 1-215-425-00 METAL 1.5K 1% 1/6W  
R14 1-215-405-00 METAL 220 1% 1/6W  
R15 1-249-405-11 CARBON 100 5% 1/4W  
R16 1-249-433-11 CARBON 22K 5% 1/4W  
R17 1-249-433-11 CARBON 22K 5% 1/4W  
R18 1-249-421-11 CARBON 2.2K 5% 1/4W  
R19 1-249-425-11 CARBON 4.7K 5% 1/4W  
R20 1-249-429-11 CARBON 10K 5% 1/4W  
R22 1-249-429-11 CARBON 10K 5% 1/4W  
R23 1-249-431-11 CARBON 15K 5% 1/4W  
R24 1-249-428-11 CARBON 8.2K 5% 1/4W  
R25 1-249-405-11 CARBON 100 5% 1/4W  
R26 1-249-417-11 CARBON 1K 5% 1/4W  
R27 1-249-405-11 CARBON 100 5% 1/4W  
R28 1-249-417-11 CARBON 1K 5% 1/4W  
R29 1-249-405-11 CARBON 100 5% 1/4W  
R30 1-249-425-11 CARBON 4.7K 5% 1/4W  
R31 1-249-425-11 CARBON 4.7K 5% 1/4W  
R32 1-249-433-11 CARBON 22K 5% 1/4W  
R33 1-249-405-11 CARBON 100 5% 1/4W  
R34 1-215-425-00 METAL 1.5K 1% 1/6W  
R35 1-215-425-00 METAL 1.5K 1% 1/6W  
R36 1-215-425-00 METAL 1.5K 1% 1/6W  
R37 1-215-425-00 METAL 1.5K 1% 1/6W  
R38 1-215-439-00 METAL 5.6K 1% 1/6W  
R39 1-215-469-00 METAL 100K 1% 1/6W  
R40 1-247-903-00 CARBON 1M 5% 1/4W  
R41 1-249-427-11 CARBON 6.8K 5% 1/4W  
R42 1-249-420-11 CARBON 1.8K 5% 1/4W  
R43 1-249-415-11 CARBON 680 5% 1/4W  
R44 1-249-418-11 CARBON 1.2K 5% 1/4W  
R45 1-249-422-11 CARBON 2.7K 5% 1/4W  
R47 1-249-413-11 CARBON 470 5% 1/4W  
R49 1-249-413-11 CARBON 470 5% 1/4W  
R50 1-249-405-11 CARBON 100 5% 1/4W  
R51 1-215-417-00 METAL 680 1% 1/6W  
R52 1-215-417-00 METAL 680 1% 1/6W  
R53 1-215-413-00 METAL 470 1% 1/6W  
R54 1-215-443-00 METAL 8.2K 1% 1/6W  
R55 1-249-421-11 CARBON 2.2K 5% 1/4W  
R56 1-249-441-11 CARBON 100K 5% 1/4W  
R57 1-249-417-11 CARBON 1K 5% 1/4W  
R58 1-249-417-11 CARBON 1K 5% 1/4W  
R59 1-249-429-11 CARBON 10K 5% 1/4W  
R60 1-249-433-11 CARBON 22K 5% 1/4W  
R61 1-249-420-11 CARBON 1.8K 5% 1/4W  
R62 1-249-429-11 CARBON 10K 5% 1/4W  
R63 1-249-425-11 CARBON 4.7K 5% 1/4W  
R64 1-249-429-11 CARBON 10K 5% 1/4W  
R65 1-215-421-00 METAL 1K 1% 1/6W  
R68 1-249-427-11 CARBON 6.8K 5% 1/4W  
R69 1-215-420-00 METAL 910 1% 1/6W  
R70 1-215-420-00 METAL 910 1% 1/6W  
R71 1-215-417-00 METAL 680 1% 1/6W  
R72 1-249-422-11 CARBON 2.7K 5% 1/4W  
R73 1-249-405-11 CARBON 100 5% 1/4W  
R74 1-215-421-00 METAL 1K 1% 1/6W  
R77 1-249-427-11 CARBON 6.8K 5% 1/4W

BC

BH

Ref.No.	Part No.	Description	Remark			Ref.No.	Part No.	Description	Remark		
R78	1-215-420-00	METAL	910	1%	1/6W	C42	1-123-356-00	ELECT	10MF	20%	16V
R79	1-215-420-00	METAL	910	1%	1/6W	C43	1-123-356-00	ELECT	10MF	20%	16V
R80	1-215-417-00	METAL	680	1%	1/6W	C44	1-123-356-00	ELECT	10MF	20%	16V
R81	1-249-422-11	CARBON	2.7K	5%	1/4W	C45	1-123-356-00	ELECT	10MF	20%	16V
R82	1-249-405-11	CARBON	100	5%	1/4W	C50	1-123-356-00	ELECT	10MF	20%	16V
R83	1-215-481-00	METAL	330K	1%	1/6W	C51	1-101-004-00	CERAMIC	0.01MF		50V
R85	1-215-429-00	METAL	2.2K	1%	1/6W	C52	1-101-004-00	CERAMIC	0.01MF		50V
R86	1-215-415-00	METAL	560	1%	1/6W	C53	1-101-004-00	CERAMIC	0.01MF		50V
R87	1-215-477-00	METAL	220K	1%	1/6W	C54	1-101-004-00	CERAMIC	0.01MF		50V
R88	1-215-457-00	METAL	33K	1%	1/6W	C55	1-101-004-00	CERAMIC	0.01MF		50V
R90	1-249-429-11	CARBON	10K	5%	1/4W	C71	1-123-333-00	ELECT	100MF	20%	16V
R91	1-249-433-11	CARBON	22K	5%	1/4W	C72	1-123-356-00	ELECT	10MF	20%	16V
R95	1-249-429-11	CARBON	10K	5%	1/4W	C73	1-123-356-00	ELECT	10MF	20%	16V
R96	1-249-433-11	CARBON	22K	5%	1/4W	C74	1-123-356-00	ELECT	10MF	20%	16V
R101	1-249-423-11	CARBON	3.3K	5%	1/4W	C80	1-123-356-00	ELECT	10MF	20%	16V
R102	1-249-419-11	CARBON	1.5K	5%	1/4W	C81	1-101-004-00	CERAMIC	0.01MF		50V
R103	1-249-427-11	CARBON	6.8K	5%	1/4W	C82	1-101-004-00	CERAMIC	0.01MF		50V
R104	1-249-422-11	CARBON	2.7K	5%	1/4W	C83	1-101-004-00	CERAMIC	0.01MF		50V
R105	1-249-429-11	CARBON	10K	5%	1/4W	C84	1-101-004-00	CERAMIC	0.01MF		50V
R202	1-249-429-11	CARBON	10K	5%	1/4W	C85	1-101-004-00	CERAMIC	0.01MF		50V
VARIABLE RESISTOR						C86	1-101-004-00	CERAMIC	0.01MF		50V
RV1	1-237-500-11	RES, ADJ, CERMET 1K				C101	1-161-021-11	CERAMIC	0.047MF	10%	25V
RV2	1-237-504-21	RES, ADJ, CERMET 20K				C102	1-102-942-00	CERAMIC	5PF	0.5PF	50V
RV3	1-237-499-21	RES, ADJ, CERMET 500				C103	1-102-959-00	CERAMIC	22PF	5%	50V
RV4	1-237-501-21	RES, ADJ, CERMET 2K				C104	1-123-356-00	ELECT	10MF	20%	16V
RV5	1-237-501-21	RES, ADJ, CERMET 2K				C105	1-161-021-11	CERAMIC	0.047MF	10%	25V
CRYSTAL						C106	1-101-004-00	CERAMIC	0.01MF		50V
X1	1-567-505-11	OSCILLATOR, CRYSTAL				C107	1-161-021-11	CERAMIC	0.047MF	10%	25V
*****						C108	1-101-004-00	CERAMIC	0.01MF		50V
*A-1135-359-A BH BOARD, COMPLETE						C109	1-101-004-00	CERAMIC	0.01MF		50V
*****						C110	1-101-880-00	CERAMIC	47PF	5%	50V
*4-353-708-00 HOOK, FINGER						C201	1-161-021-11	CERAMIC	0.047MF	10%	25V
CAPACITOR						C202	1-102-942-00	CERAMIC	5PF	0.5PF	50V
C1	1-124-963-11	ELECT	33MF	20%	16V	C203	1-102-959-00	CERAMIC	22PF	5%	50V
C2	1-124-963-11	ELECT	33MF	20%	16V	C204	1-123-356-00	ELECT	10MF	20%	16V
C3	1-124-963-11	ELECT	33MF	20%	16V	C205	1-161-021-11	CERAMIC	0.047MF	10%	25V
C4	1-124-963-11	ELECT	33MF	20%	16V	C206	1-101-004-00	CERAMIC	0.01MF		50V
C5	1-124-963-11	ELECT	33MF	20%	16V	C207	1-161-021-11	CERAMIC	0.047MF	10%	25V
C6	1-124-963-11	ELECT	33MF	20%	16V	C208	1-101-004-00	CERAMIC	0.01MF		50V
C7	1-124-963-11	ELECT	33MF	20%	16V	C209	1-101-004-00	CERAMIC	0.01MF		50V
C8	1-124-963-11	ELECT	33MF	20%	16V	C210	1-101-880-00	CERAMIC	47PF	5%	50V
C9	1-124-963-11	ELECT	33MF	20%	16V	C301	1-161-021-11	CERAMIC	0.047MF	10%	25V
C10	1-124-963-11	ELECT	33MF	20%	16V	C302	1-102-942-00	CERAMIC	5PF	0.5PF	50V
C11	1-124-963-11	ELECT	33MF	20%	16V	C303	1-102-959-00	CERAMIC	22PF	5%	50V
C12	1-124-963-11	ELECT	33MF	20%	16V	C304	1-123-356-00	ELECT	10MF	20%	16V
C13	1-124-963-11	ELECT	33MF	20%	16V	C305	1-161-021-11	CERAMIC	0.047MF	10%	25V
C14	1-124-963-11	ELECT	33MF	20%	16V	C306	1-101-004-00	CERAMIC	0.01MF		50V
C15	1-101-004-00	CERAMIC	0.01MF		50V	C307	1-161-021-11	CERAMIC	0.047MF	10%	25V
C16	1-101-004-00	CERAMIC	0.01MF		50V	C308	1-101-004-00	CERAMIC	0.01MF		50V
C17	1-101-004-00	CERAMIC	0.01MF		50V	C309	1-101-004-00	CERAMIC	0.01MF		50V
C18	1-101-004-00	CERAMIC	0.01MF		50V	C310	1-101-880-00	CERAMIC	47PF	5%	50V
C20	1-123-382-00	ELECT	3.3MF	20%	50V	DIODE					
C21	1-123-356-00	ELECT	10MF	20%	16V	D1	8-719-911-19	DIODE 1SS119			
C22	1-123-356-00	ELECT	10MF	20%	16V	D101	8-719-911-19	DIODE 1SS119			
C23	1-123-356-00	ELECT	10MF	20%	16V	D102	8-719-911-19	DIODE 1SS119			
C24	1-123-356-00	ELECT	10MF	20%	16V	D201	8-719-911-19	DIODE 1SS119			
C26	1-101-004-00	CERAMIC	0.01MF		50V	D202	8-719-911-19	DIODE 1SS119			
C41	1-123-333-00	ELECT	100MF	20%	16V	D301	8-719-911-19	DIODE 1SS119			
						D302	8-719-911-19	DIODE 1SS119			

Ref.No. Part No. Description

IC

IC1	8-759-240-53	IC TC4053BP
IC2	8-759-240-53	IC TC4053BP
IC3	8-759-240-53	IC TC4053BP
IC4	8-759-240-53	IC TC4053BP
IC5	8-759-700-08	IC NJM4558S
IC6	8-759-700-08	IC NJM4558S
IC7	8-759-800-81	IC LA7016
IC8	8-759-800-81	IC LA7016
IC9	8-759-140-53	IC UPD4053BC
IC10	8-759-140-53	IC UPD4053BC
IC11	8-759-140-81	IC UPD4081BC
IC12	8-759-140-81	IC UPD4081BC
IC13	8-759-140-01	IC UPD4001BC
IC14	8-759-240-30	IC TC4030BP
IC101	8-769-401-89	TRANSISTOR TX-429M
IC102	8-759-990-82	IC TLO82CP
IC201	8-769-401-89	TRANSISTOR TX-429M
IC202	8-759-990-82	IC TLO82CP
IC301	8-769-401-89	TRANSISTOR TX-429M
IC302	8-759-990-82	IC TLO82CP

TRANSISTOR

Q1	8-729-603-50	TRANSISTOR 2SC403SP
Q2	8-729-105-71	TRANSISTOR 2SK523-K2
Q3	8-729-384-48	TRANSISTOR 2SA844
Q4	8-729-603-50	TRANSISTOR 2SC403SP
Q5	8-729-105-71	TRANSISTOR 2SK523-K2
Q6	8-729-384-48	TRANSISTOR 2SA844
Q7	8-729-603-50	TRANSISTOR 2SC403SP
Q8	8-729-105-71	TRANSISTOR 2SK523-K2
Q9	8-729-384-48	TRANSISTOR 2SA844
Q10	8-729-603-50	TRANSISTOR 2SC403SP
Q11	8-729-105-71	TRANSISTOR 2SK523-K2
Q12	8-729-384-48	TRANSISTOR 2SA844
Q13	8-729-384-48	TRANSISTOR 2SA844
Q14	8-729-384-48	TRANSISTOR 2SA844
Q15	8-729-384-48	TRANSISTOR 2SA844
Q16	8-729-800-10	TRANSISTOR 2SC3068
Q101	8-729-601-47	TRANSISTOR 2SK381-B
Q102	8-729-384-48	TRANSISTOR 2SA844
Q103	8-729-603-50	TRANSISTOR 2SC403SP
Q104	8-729-603-50	TRANSISTOR 2SC403SP
Q105	8-729-603-50	TRANSISTOR 2SC403SP
Q106	8-729-601-47	TRANSISTOR 2SK381-B
Q107	8-729-601-47	TRANSISTOR 2SK381-B
Q108	8-729-601-47	TRANSISTOR 2SK381-B
Q201	8-729-601-47	TRANSISTOR 2SK381-B
Q202	8-729-384-48	TRANSISTOR 2SA844
Q203	8-729-603-50	TRANSISTOR 2SC403SP
Q204	8-729-603-50	TRANSISTOR 2SC403SP
Q205	8-729-603-50	TRANSISTOR 2SC403SP
Q206	8-729-601-47	TRANSISTOR 2SK381-B
Q207	8-729-601-47	TRANSISTOR 2SK381-B
Q208	8-729-601-47	TRANSISTOR 2SK381-B
Q301	8-729-601-47	TRANSISTOR 2SK381-B
Q302	8-729-384-48	TRANSISTOR 2SA844
Q303	8-729-603-50	TRANSISTOR 2SC403SP
Q304	8-729-603-50	TRANSISTOR 2SC403SP
Q305	8-729-603-50	TRANSISTOR 2SC403SP
Q306	8-729-601-47	TRANSISTOR 2SK381-B
Q307	8-729-601-47	TRANSISTOR 2SK381-B
Q308	8-729-601-47	TRANSISTOR 2SK381-B

Remark

Ref.No. Part No. Description

RESISTOR

R1	1-249-433-11	CARBON	22K	5%	1/4W
R3	1-249-427-11	CARBON	6.8K	5%	1/4W
R5	1-249-422-11	CARBON	2.7K	5%	1/4W
R6	1-249-433-11	CARBON	22K	5%	1/4W
R7	1-249-433-11	CARBON	22K	5%	1/4W
R9	1-249-427-11	CARBON	6.8K	5%	1/4W
R11	1-249-422-11	CARBON	2.7K	5%	1/4W
R12	1-249-433-11	CARBON	22K	5%	1/4W
R13	1-249-433-11	CARBON	22K	5%	1/4W
R15	1-249-427-11	CARBON	6.8K	5%	1/4W
R17	1-249-422-11	CARBON	2.7K	5%	1/4W
R18	1-249-433-11	CARBON	22K	5%	1/4W
R19	1-249-433-11	CARBON	22K	5%	1/4W
R21	1-249-427-11	CARBON	6.8K	5%	1/4W
R23	1-249-422-11	CARBON	2.7K	5%	1/4W
R31	1-249-405-11	CARBON	100	5%	1/4W
R32	1-249-405-11	CARBON	100	5%	1/4W
R33	1-249-433-11	CARBON	22K	5%	1/4W
R34	1-249-422-11	CARBON	2.7K	5%	1/4W
R35	1-249-405-11	CARBON	100	5%	1/4W
R36	1-249-405-11	CARBON	100	5%	1/4W
R37	1-249-433-11	CARBON	22K	5%	1/4W
R38	1-249-422-11	CARBON	2.7K	5%	1/4W
R39	1-249-433-11	CARBON	22K	5%	1/4W
R40	1-249-422-11	CARBON	2.7K	5%	1/4W
R52	1-249-417-11	CARBON	1K	5%	1/4W
R53	1-249-425-11	CARBON	4.7K	5%	1/4W
R54	1-249-441-11	CARBON	100K	5%	1/4W
R63	1-249-417-11	CARBON	1K	5%	1/4W
R64	1-249-437-11	CARBON	47K	5%	1/4W
R65	1-249-433-11	CARBON	22K	5%	1/4W
R66	1-249-417-11	CARBON	1K	5%	1/4W
R101	1-247-903-00	CARBON	1M	5%	1/4W
R102	1-249-431-11	CARBON	15K	5%	1/4W
R103	1-249-419-11	CARBON	1.5K	5%	1/4W
R104	1-249-430-11	CARBON	12K	5%	1/4W
R105	1-249-409-11	CARBON	220	5%	1/4W
R106	1-249-419-11	CARBON	1.5K	5%	1/4W
R107	1-215-425-00	METAL	1.5K	1%	1/6W
R108	1-249-415-11	CARBON	680	5%	1/4W
R109	1-249-419-11	CARBON	1.5K	5%	1/4W
R110	1-215-427-00	METAL	1.8K	1%	1/6W
R111	1-215-453-00	METAL	22K	1%	1/6W
R112	1-249-419-11	CARBON	1.5K	5%	1/4W
R113	1-249-405-11	CARBON	100	5%	1/4W
R114	1-215-445-00	METAL	10K	1%	1/6W
R115	1-215-445-00	METAL	10K	1%	1/6W
R116	1-249-429-11	CARBON	10K	5%	1/4W
R117	1-215-493-00	METAL	1M	1%	1/6W
R120	1-215-451-00	METAL	18K	1%	1/6W
R121	1-215-453-00	METAL	22K	1%	1/6W
R201	1-247-903-00	CARBON	1M	5%	1/4W
R202	1-249-431-11	CARBON	15K	5%	1/4W
R203	1-249-419-11	CARBON	1.5K	5%	1/4W
R204	1-249-430-11	CARBON	12K	5%	1/4W
R205	1-249-409-11	CARBON	220	5%	1/4W
R206	1-249-419-11	CARBON	1.5K	5%	1/4W
R207	1-215-425-00	METAL	1.5K	1%	1/6W
R208	1-249-415-11	CARBON	680	5%	1/4W
R209	1-249-419-11	CARBON	1.5K	5%	1/4W
R210	1-215-427-00	METAL	1.8K	1%	1/6W

Remark

BH

BJ

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R211	1-215-453-00	METAL	22K 1% 1/6W	C31	1-101-361-00	CERAMIC	150PF 5% 50V
R212	1-249-419-11	CARBON	1.5K 5% 1/4W	C32	1-101-361-00	CERAMIC	150PF 5% 50V
R213	1-249-405-11	CARBON	100 5% 1/4W	C33	1-101-361-00	CERAMIC	150PF 5% 50V
R214	1-215-445-00	METAL	10K 1% 1/6W	C34	1-101-361-00	CERAMIC	150PF 5% 50V
R215	1-215-445-00	METAL	10K 1% 1/6W	C35	1-130-471-00	MYLAR	0.001MF 5% 50V
R216	1-249-429-11	CARBON	10K 5% 1/4W	C36	1-102-824-00	CERAMIC	470PF 5% 50V
R217	1-215-455-00	METAL	27K 1% 1/6W	C37	1-123-380-00	ELECT	1MF 20% 50V
R301	1-247-903-00	CARBON	1M 5% 1/4W	C38	1-101-004-00	CERAMIC	0.01MF 50V
R302	1-249-431-11	CARBON	15K 5% 1/4W	C39	1-101-004-00	CERAMIC	0.01MF 50V
R303	1-249-419-11	CARBON	1.5K 5% 1/4W	C40	1-102-074-00	CERAMIC	0.001MF 10% 50V
R304	1-249-430-11	CARBON	12K 5% 1/4W	C61	1-101-888-00	CERAMIC	68PF 5% 50V
R305	1-249-409-11	CARBON	220 5% 1/4W	C62	1-101-880-00	CERAMIC	47PF 5% 50V
R306	1-249-419-11	CARBON	1.5K 5% 1/4W	C63	1-101-888-00	CERAMIC	68PF 5% 50V
R307	1-215-425-00	METAL	1.5K 1% 1/6W	C64	1-101-88-000	CERAMIC	47PF 5% 50V
R308	1-249-415-11	CARBON	680 5% 1/4W	C65	1-102-820-00	CERAMIC	330PF 5% 50V
R309	1-249-419-11	CARBON	1.5K 5% 1/4W	C66	1-101-004-00	CERAMIC	0.01MF 50V
R310	1-215-427-00	METAL	1.8K 1% 1/6W	C67	1-101-880-00	CERAMIC	47PF 5% 50V
R311	1-215-453-00	METAL	22K 1% 1/6W	C100	1-123-332-00	ELECT	47MF 20% 16V
R312	1-249-419-11	CARBON	1.5K 5% 1/4W	C102	1-124-963-11	ELECT	33MF 20% 16V
R313	1-249-405-11	CARBON	100 5% 1/4W	C106	1-101-004-00	CERAMIC	0.01MF 50V
R314	1-215-445-00	METAL	10K 1% 1/6W	C108	1-124-963-11	ELECT	33MF 20% 16V
R315	1-215-445-00	METAL	10K 1% 1/6W	C109	1-101-004-00	CERAMIC	0.01MF 50V
R316	1-249-429-11	CARBON	10K 5% 1/4W	C110	1-101-004-00	CERAMIC	0.01MF 50V
VARIABLE RESISTOR				C111	1-101-004-00	CERAMIC	0.01MF 50V
RV1	1-237-505-21	RES, ADJ, CERMET 50K		C112	1-101-004-00	CERAMIC	0.01MF 50V
RV2	1-237-505-21	RES, ADJ, CERMET 50K		C113	1-101-004-00	CERAMIC	0.01MF 50V
RV3	1-237-505-21	RES, ADJ, CERMET 50K		C114	1-123-356-00	ELECT	10MF 20% 16V
SWITCH				C115	1-101-004-00	CERAMIC	0.01MF 50V
S1	1-554-076-21	SWITCH, SLIDE		C116	1-101-004-00	CERAMIC	0.01MF 50V
S2	1-554-075-21	SWITCH, SLIDE		C117	1-101-004-00	CERAMIC	0.01MF 50V
*****				C118	1-123-356-00	ELECT	10MF 20% 16V
*A-1135-361-A BJ BOARD, COMPLETE				C120	1-101-004-00	CERAMIC	0.01MF 50V
*****				C121	1-101-004-00	CERAMIC	0.01MF 50V
*4-353-708-00 HOOK, FINGER				C122	1-101-004-00	CERAMIC	0.01MF 50V
CAPACITOR				C130	1-124-963-11	ELECT	33MF 20% 16V
C1	1-101-361-00	CERAMIC	150PF 5% 50V	DIODE			
C2	1-101-361-00	CERAMIC	150PF 5% 50V	D1	8-719-911-19	DIODE 1SS119	
C4	1-102-821-00	CERAMIC	360PF 5% 50V	D2	8-719-911-19	DIODE 1SS119	
C5	1-130-473-00	MYLAR	0.0015MF 5% 50V	D3	8-719-911-19	DIODE 1SS119	
C11	1-104-302-11	POLYSTYRENE	0.001MF 5% 50V	D7	8-719-911-19	DIODE 1SS119	
C12	1-101-888-00	CERAMIC	68PF 5% 50V	D8	8-719-911-19	DIODE 1SS119	
C14	1-101-888-00	CERAMIC	68PF 5% 50V	D9	8-719-911-19	DIODE 1SS119	
C15	1-101-888-00	CERAMIC	68PF 5% 50V	D11	8-719-000-12	DIODE MC931	
C16	1-101-888-00	CERAMIC	68PF 5% 50V	IC			
C17	1-101-888-00	CERAMIC	68PF 5% 50V	IC1	8-759-345-38	IC HD145388P	
C18	1-104-302-11	POLYSTYRENE	0.001MF 5% 50V	IC2	8-759-140-01	IC UPD4001BC	
C19	1-102-973-00	CERAMIC	100PF 5% 50V	IC3	8-759-240-40	IC TC4040BP	
C20	1-101-888-00	CERAMIC	68PF 5% 50V	IC4	8-759-240-40	IC TC4040BP	
C21	1-101-361-00	CERAMIC	150PF 5% 50V	IC5	8-759-205-77	IC TC504027BP	
C22	1-101-890-00	CERAMIC	75PF 5% 50V	IC6	8-759-205-77	IC TC504027BP	
C23	1-102-965-00	CERAMIC	39PF 5% 50V	IC7	8-759-205-77	IC TC504027BP	
C25	1-102-811-91	CERAMIC	9PF 1PF 50V	IC8	8-759-205-77	IC TC504027BP	
C26	1-102-944-00	CERAMIC	7PF 1PF 50V	IC9	8-759-205-77	IC TC504027BP	
C27	1-101-361-00	CERAMIC	150PF 5% 50V	IC10	8-759-345-38	IC HD145388P	
C28	1-130-471-00	MYLAR	0.001MF 5% 50V	IC11	8-759-345-38	IC HD145388P	
C29	1-130-471-00	MYLAR	0.001MF 5% 50V	IC12	8-759-345-38	IC HD145388P	
C30	1-101-004-00	CERAMIC	0.01MF 50V	IC13	8-759-140-01	IC UPD4001BC	
				IC14	8-759-140-01	IC UPD4001BC	
				IC15	8-759-240-71	IC TC4071BPC	
				IC16	8-759-340-11	IC HD14011BP	
				IC17	8-759-340-11	IC HD14011BP	

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
IC18	8-759-240-23	IC TC4023BP		R62	1-249-433-11	CARBON 22K 5% 1/4W	
IC19	8-759-140-81	IC UPD4081BC		R63	1-249-425-11	CARBON 4.7K 5% 1/4W	
IC20	8-759-140-81	IC UPD4081BC		R64	1-249-425-11	CARBON 4.7K 5% 1/4W	
IC21	8-759-240-71	IC TC4071BPC		R65	1-249-417-11	CARBON 1K 5% 1/4W	
IC22	8-759-240-71	IC TC4071BPC		R66	1-249-430-11	CARBON 12K 5% 1/4W	
IC23	8-759-240-73	IC TC4073BP		R67	1-249-425-11	CARBON 4.7K 5% 1/4W	
IC24	8-759-140-69	IC UPD4069UBC		R68	1-249-433-11	CARBON 22K 5% 1/4W	
IC25	8-759-140-69	IC UPD4069UBC		R69	1-249-425-11	CARBON 4.7K 5% 1/4W	
IC26	8-759-241-75	IC TC40175BP		R70	1-249-417-11	CARBON 1K 5% 1/4W	
IC27	8-759-140-53	IC UPD4053BC		R71	1-249-430-11	CARBON 12K 5% 1/4W	
IC28	8-759-208-04	IC TC4520BPHB		R72	1-249-433-11	CARBON 22K 5% 1/4W	
IC29	8-759-345-38	IC HD1453BPP		R74	1-249-430-11	CARBON 12K 5% 1/4W	
<u>COIL</u>				R75	1-249-422-11	CARBON 2.7K 5% 1/4W	
L1	1-408-098-00	INDUCTOR 560UH		R76	1-215-463-00	METAL 56K 1% 1/6W	
L2	1-407-717-00	INDUCTOR 1MMH		R77	1-215-475-00	METAL 180K 1% 1/6W	
L3	1-407-715-00	INDUCTOR 680UH		R78	1-215-439-00	METAL 5.6K 1% 1/6W	
<u>TRANSISTOR</u>				R79	1-249-425-11	CARBON 4.7K 5% 1/4W	
Q14	8-729-178-54	TRANSISTOR 2SC2785		R80	1-249-433-11	CARBON 22K 5% 1/4W	
Q15	8-729-178-54	TRANSISTOR 2SC2785		R81	1-249-425-11	CARBON 4.7K 5% 1/4W	
Q16	8-729-178-54	TRANSISTOR 2SC2785		R82	1-249-415-11	CARBON 680 5% 1/4W	
Q17	8-729-178-54	TRANSISTOR 2SC2785		R83	1-249-417-11	CARBON 1K 5% 1/4W	
Q18	8-729-178-54	TRANSISTOR 2SC2785		R85	1-249-430-11	CARBON 12K 5% 1/4W	
Q19	8-729-611-53	TRANSISTOR 2SA1115-F		R87	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q20	8-729-178-54	TRANSISTOR 2SC2785		R89	1-247-887-00	CARBON 220K 5% 1/4W	
Q21	8-729-178-54	TRANSISTOR 2SC2785		R90	1-249-441-11	CARBON 100K 5% 1/4W	
Q22	8-729-178-54	TRANSISTOR 2SC2785		R91	1-249-441-11	CARBON 100K 5% 1/4W	
Q23	8-729-600-60	TRANSISTOR 2SA1115P		R92	1-249-441-11	CARBON 100K 5% 1/4W	
Q24	8-729-178-54	TRANSISTOR 2SC2785		R93	1-249-429-11	CARBON 10K 5% 1/4W	
Q25	8-729-178-54	TRANSISTOR 2SC2785		R94	1-249-429-11	CARBON 10K 5% 1/4W	
Q26	8-729-178-54	TRANSISTOR 2SC2785		R95	1-249-441-11	CARBON 100K 5% 1/4W	
<u>RESISTOR</u>				R96	1-249-417-11	CARBON 1K 5% 1/4W	
R2	1-215-439-00	METAL 5.6K 1% 1/6W		R100	1-249-423-11	CARBON 3.3K 5% 1/4W	
R3	1-249-422-11	CARBON 2.7K 5% 1/4W		R111	1-249-427-11	CARBON 6.8K 5% 1/4W	
R4	1-215-449-00	METAL 15K 1% 1/6W		R112	1-249-429-11	CARBON 10K 5% 1/4W	
R5	1-249-441-11	CARBON 100K 5% 1/4W		R113	1-249-429-11	CARBON 10K 5% 1/4W	
R6	1-249-425-11	CARBON 4.7K 5% 1/4W		R114	1-249-422-11	CARBON 2.7K 5% 1/4W	
R7	1-215-439-00	METAL 5.6K 1% 1/6W		R115	1-249-419-11	CARBON 1.5K 5% 1/4W	
R37	1-249-441-11	CARBON 100K 5% 1/4W		R116	1-249-427-11	CARBON 6.8K 5% 1/4W	
R38	1-215-454-00	METAL 24K 1% 1/6W		R117	1-249-429-11	CARBON 10K 5% 1/4W	
R39	1-249-422-11	CARBON 2.7K 5% 1/4W		R118	1-249-429-11	CARBON 10K 5% 1/4W	
R42	1-249-433-11	CARBON 22K 5% 1/4W		R119	1-249-422-11	CARBON 2.7K 5% 1/4W	
R43	1-247-876-11	CARBON 75K 5% 1/4W		R120	1-249-419-11	CARBON 1.5K 5% 1/4W	
R44	1-249-429-11	CARBON 10K 5% 1/4W		R121	1-249-417-11	CARBON 1K 5% 1/4W	
R45	1-249-441-11	CARBON 100K 5% 1/4W		R122	1-249-417-11	CARBON 1K 5% 1/4W	
R46	1-249-441-11	CARBON 100K 5% 1/4W		R123	1-249-413-11	CARBON 470 5% 1/4W	
R47	1-247-862-11	CARBON 20K 5% 1/4W		R124	1-249-417-11	CARBON 1K 5% 1/4W	
R48	1-215-467-00	METAL 82K 1% 1/6W		R125	1-249-417-11	CARBON 1K 5% 1/4W	
R49	1-249-422-11	CARBON 2.7K 5% 1/4W		R126	1-249-417-11	CARBON 1K 5% 1/4W	
R50	1-215-469-00	METAL 100K 1% 1/6W		R127	1-249-417-11	CARBON 1K 5% 1/4W	
R51	1-215-445-00	METAL 10K 1% 1/6W		R128	1-249-417-11	CARBON 1K 5% 1/4W	
R52	1-247-885-00	CARBON 180K 5% 1/4W		R129	1-249-417-11	CARBON 1K 5% 1/4W	
R53	1-215-449-00	METAL 15K 1% 1/6W		<u>VARIABLE RESISTOR</u>			
R54	1-249-422-11	CARBON 2.7K 5% 1/4W		RV1	1-237-504-21	RES, ADJ, CERMET 20K	
R56	1-249-434-11	CARBON 27K 5% 1/4W		RV3	1-237-504-21	RES, ADJ, CERMET 20K	
R57	1-249-422-11	CARBON 2.7K 5% 1/4W		RV4	1-237-503-21	RES, ADJ, CERMET 10K	
R58	1-249-425-11	CARBON 4.7K 5% 1/4W		RV5	1-237-506-21	RES, ADJ, CERMET 100K	
R59	1-247-836-11	CARBON 1.6K 5% 1/4W		RV6	1-237-505-21	RES, ADJ, CERMET 50K	
R60	1-249-427-11	CARBON 6.8K 5% 1/4W		RV7	1-237-504-21	RES, ADJ, CERMET 20K	
R61	1-215-449-00	METAL 15K 1% 1/6W		RV8	1-237-504-21	RES, ADJ, CERMET 20K	
				RV9	1-237-505-21	RES, ADJ, CERMET 50K	

BJ

BI

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
<u>SWITCH</u>				C115	1-136-153-00	FILM 0.01MF	5% 50V
S1	1-554-076-21	SWITCH, SLIDE		C116	1-102-973-00	CERAMIC 100PF	5% 50V
				C117	1-101-004-00	CERAMIC 0.01MF	50V
*****				C118	1-101-004-00	CERAMIC 0.01MF	50V
*A-1135-522-A BI BOARD, COMPLETE				C119	1-102-953-00	CERAMIC 18PF	5% 50V
*****				C120	1-102-973-00	CERAMIC 100PF	5% 50V
*4-353-708-00 HOOK, FINGER				C122	1-102-961-00	CERAMIC 27PF	5% 50V
				C201	1-101-004-00	CERAMIC 0.01MF	50V
				C202	1-123-380-00	ELECT 1MF	20% 50V
				C204	1-123-356-00	ELECT 10MF	20% 16V
				C205	1-101-004-00	CERAMIC 0.01MF	50V
<u>CAPACITOR</u>				C206	1-136-161-00	FILM 0.047MF	5% 50V
C1	1-130-481-00	MYLAR 0.0068MF	5% 50V	C207	1-102-937-00	CERAMIC 4PF	0.25PF 50V
C2	1-136-165-00	FILM 0.1MF	5% 50V	C208	1-101-880-00	CERAMIC 47PF	5% 50V
C3	1-123-369-00	ELECT 4.7MF	20% 25V	C209	1-136-161-00	FILM 0.047MF	5% 50V
C4	1-123-369-00	ELECT 4.7MF	20% 25V	C210	1-136-161-00	FILM 0.047MF	5% 50V
C5	1-102-973-00	CERAMIC 100PF	5% 50V	C214	1-102-951-00	CERAMIC 15PF	5% 50V
C7	1-123-330-00	ELECT 22MF	20% 25V	C215	1-136-153-00	FILM 0.01MF	5% 50V
C8	1-123-369-00	ELECT 4.7MF	20% 25V	C216	1-102-973-00	CERAMIC 100PF	5% 50V
C11	1-123-356-00	ELECT 10MF	20% 16V	C217	1-101-004-00	CERAMIC 0.01MF	50V
C12	1-101-004-00	CERAMIC 0.01MF	50V	C218	1-101-004-00	CERAMIC 0.01MF	50V
C13	1-101-004-00	CERAMIC 0.01MF	50V	C219	1-102-953-00	CERAMIC 18PF	5% 50V
C14	1-101-004-00	CERAMIC 0.01MF	50V	C220	1-102-973-00	CERAMIC 100PF	5% 50V
C15	1-123-330-00	ELECT 22MF	20% 16V	C222	1-102-961-00	CERAMIC 27PF	5% 50V
C16	1-123-356-00	ELECT 10MF	20% 16V	C301	1-101-004-00	CERAMIC 0.01MF	50V
C17	1-101-004-00	CERAMIC 0.01MF	50V	C302	1-123-380-00	ELECT 1MF	20% 50V
C18	1-101-004-00	CERAMIC 0.01MF	50V	C304	1-123-356-00	ELECT 10MF	20% 16V
C19	1-101-004-00	CERAMIC 0.01MF	50V	C305	1-101-004-00	CERAMIC 0.01MF	50V
C41	1-124-963-11	ELECT 33MF	20% 16V	C306	1-136-161-00	FILM 0.047MF	5% 50V
C42	1-124-963-11	ELECT 33MF	20% 16V	C307	1-102-937-00	CERAMIC 4PF	0.25PF 50V
C43	1-124-963-11	ELECT 33MF	20% 16V	C308	1-101-880-00	CERAMIC 47PF	5% 50V
C44	1-124-963-11	ELECT 33MF	20% 16V	C309	1-136-161-00	FILM 0.047MF	5% 50V
C45	1-124-963-11	ELECT 33MF	20% 16V	C310	1-136-161-00	FILM 0.047MF	5% 50V
C46	1-124-963-11	ELECT 33MF	20% 16V	C314	1-102-951-00	CERAMIC 15PF	5% 50V
C51	1-101-004-00	CERAMIC 0.01MF	50V	C315	1-136-153-00	FILM 0.01MF	5% 50V
C52	1-101-004-00	CERAMIC 0.01MF	50V	C316	1-102-973-00	CERAMIC 100PF	5% 50V
C53	1-101-004-00	CERAMIC 0.01MF	50V	C317	1-101-004-00	CERAMIC 0.01MF	50V
C54	1-101-004-00	CERAMIC 0.01MF	50V	C318	1-101-004-00	CERAMIC 0.01MF	50V
C55	1-101-004-00	CERAMIC 0.01MF	50V	C319	1-102-953-00	CERAMIC 18PF	5% 50V
C56	1-101-004-00	CERAMIC 0.01MF	50V	C320	1-102-973-00	CERAMIC 100PF	5% 50V
C57	1-101-004-00	CERAMIC 0.01MF	50V	C322	1-102-961-00	CERAMIC 27PF	5% 50V
C71	1-124-963-11	ELECT 33MF	20% 16V	<u>DIODE</u>			
C72	1-124-963-11	ELECT 33MF	20% 16V	D1	8-719-911-19	DIODE 1SS119	
C73	1-124-963-11	ELECT 33MF	20% 16V	D2	8-719-911-19	DIODE 1SS119	
C74	1-124-963-11	ELECT 33MF	20% 16V	D4	8-719-911-19	DIODE 1SS119	
C75	1-124-963-11	ELECT 33MF	20% 16V	D5	8-719-911-19	DIODE 1SS119	
C76	1-124-963-11	ELECT 33MF	20% 16V	D6	8-719-110-31	DIODE RD12ES-B2	
C81	1-101-004-00	CERAMIC 0.01MF	50V	D7	8-719-911-19	DIODE 1SS119	
C82	1-101-004-00	CERAMIC 0.01MF	50V	D8	8-719-911-19	DIODE 1SS119	
C83	1-101-004-00	CERAMIC 0.01MF	50V	D101	8-719-911-19	DIODE 1SS119	
C84	1-101-004-00	CERAMIC 0.01MF	50V	D102	8-719-000-12	DIODE MC931	
C85	1-101-004-00	CERAMIC 0.01MF	50V	D103	8-719-109-73	DIODE RD4.3ES-B	
C86	1-101-004-00	CERAMIC 0.01MF	50V	D104	8-719-911-19	DIODE 1SS119	
C87	1-101-004-00	CERAMIC 0.01MF	50V	D105	8-719-109-91	DIODE RD6.2ES-B	
C101	1-101-004-00	CERAMIC 0.01MF	50V	D201	8-719-911-19	DIODE 1SS119	
C102	1-123-380-00	ELECT 1MF	20% 50V	D202	8-719-000-12	DIODE MC931	
C104	1-123-356-00	ELECT 10MF	20% 16V	D203	8-719-109-73	DIODE RD4.3ES-B	
C105	1-101-004-00	CERAMIC 0.01MF	50V	D204	8-719-911-19	DIODE 1SS119	
C106	1-136-161-00	FILM 0.047MF	5% 50V	D205	8-719-109-91	DIODE RD6.2ES-B	
C107	1-102-937-00	CERAMIC 4PF	0.25PF 50V	D301	8-719-911-19	DIODE 1SS119	
C108	1-101-880-00	CERAMIC 47PF	5% 50V	D302	8-719-000-12	DIODE MC931	
C109	1-136-161-00	FILM 0.047MF	5% 50V	D303	8-719-109-73	DIODE RD4.3ES-B	
C110	1-136-161-00	FILM 0.047MF	5% 50V				
C114	1-102-951-00	CERAMIC 15PF	5% 50V				

Ref.No.	Part No.	Description
D304	8-719-911-19	DIODE 1SS119
D305	8-719-109-91	DIODE RD6.2ES-B
<u>IC</u>		
IC1	8-759-145-58	IC UPC4558C
IC101	8-759-240-53	IC TC4053BP
IC102	8-769-401-89	TRANSISTOR TX-429M
IC103	8-759-990-82	IC TL082CP
IC104	8-759-990-82	IC TL082CP
IC105	8-759-990-82	IC TL082CP
IC201	8-759-240-53	IC TC4053BP
IC202	8-769-401-89	TRANSISTOR TX-429M
IC203	8-759-990-82	IC TL082CP
IC204	8-759-990-82	IC TL082CP
IC205	8-759-990-82	IC TL082CP
IC301	8-759-240-53	IC TC4053BP
IC302	8-769-401-89	TRANSISTOR TX-429M
IC303	8-759-990-82	IC TL082CP
IC304	8-759-990-82	IC TL082CP
IC305	8-759-990-82	IC TL082CP
<u>TRANSISTOR</u>		
Q1	8-729-900-74	TRANSISTOR DTC143TS
Q2	8-729-603-50	TRANSISTOR 2SC403SP
Q3	8-729-603-50	TRANSISTOR 2SC403SP
Q11	8-729-201-04	TRANSISTOR 2SC2878
Q12	8-729-201-04	TRANSISTOR 2SC2878
Q13	8-729-201-04	TRANSISTOR 2SC2878
Q14	8-729-201-04	TRANSISTOR 2SC2878
Q15	8-729-900-65	TRANSISTOR DTA144ES
Q101	8-729-384-48	TRANSISTOR 2SA844
Q102	8-729-384-48	TRANSISTOR 2SA844
Q103	8-729-384-48	TRANSISTOR 2SA844
Q105	8-729-601-47	TRANSISTOR 2SK381-B
Q106	8-729-384-48	TRANSISTOR 2SA844
Q107	8-729-266-83	TRANSISTOR 2SC2668
Q108	8-729-384-48	TRANSISTOR 2SA844
Q109	8-729-601-47	TRANSISTOR 2SK381-B
Q110	8-729-601-47	TRANSISTOR 2SK381-B
Q113	8-729-601-47	TRANSISTOR 2SK381-B
Q114	8-729-200-17	TRANSISTOR 2SA1091
Q201	8-729-384-48	TRANSISTOR 2SA844
Q202	8-729-384-48	TRANSISTOR 2SA844
Q203	8-729-384-48	TRANSISTOR 2SA844
Q205	8-729-601-47	TRANSISTOR 2SK381-B
Q206	8-729-384-48	TRANSISTOR 2SA844
Q207	8-729-266-83	TRANSISTOR 2SC2668
Q208	8-729-384-48	TRANSISTOR 2SA844
Q209	8-729-601-47	TRANSISTOR 2SK381-B
Q210	8-729-601-47	TRANSISTOR 2SK381-B
Q213	8-729-601-47	TRANSISTOR 2SK381-B
Q214	8-729-200-17	TRANSISTOR 2SA1091
Q301	8-729-384-48	TRANSISTOR 2SA844
Q302	8-729-384-48	TRANSISTOR 2SA844
Q303	8-729-384-48	TRANSISTOR 2SA844
Q305	8-729-601-47	TRANSISTOR 2SK381-B
Q306	8-729-384-48	TRANSISTOR 2SA844
Q307	8-729-266-83	TRANSISTOR 2SC2668
Q308	8-729-384-48	TRANSISTOR 2SA844
Q309	8-729-601-47	TRANSISTOR 2SK381-B
Q310	8-729-601-47	TRANSISTOR 2SK381-B
Q313	8-729-601-47	TRANSISTOR 2SK381-B

Ref.No.	Part No.	Description	Remark
Q314	8-729-200-17	TRANSISTOR 2SA1091	
<u>RESISTOR</u>			
R1	1-247-903-00	CARBON	1M 5% 1/4W
R2	1-249-429-11	CARBON	10K 5% 1/4W
R3	1-215-493-00	METAL	1M 1% 1/6W
R4	1-215-469-00	METAL	100K 1% 1/6W
R5	1-249-435-11	CARBON	33K 5% 1/4W
R8	1-249-441-11	CARBON	100K 5% 1/4W
R9	1-249-424-11	CARBON	3.9K 5% 1/4W
R10	1-249-425-11	CARBON	4.7K 5% 1/4W
R11	1-249-435-11	CARBON	33K 5% 1/4W
R12	1-249-429-11	CARBON	10K 5% 1/4W
R13	1-249-425-11	CARBON	4.7K 5% 1/4W
R14	1-249-435-11	CARBON	33K 5% 1/4W
R15	1-249-429-11	CARBON	10K 5% 1/4W
R23	1-249-417-11	CARBON	1K 5% 1/4W
R24	1-249-417-11	CARBON	1K 5% 1/4W
R25	1-249-417-11	CARBON	1K 5% 1/4W
R31	1-249-430-11	CARBON	12K 5% 1/4W
R32	1-249-436-11	CARBON	39K 5% 1/4W
R33	1-249-430-11	CARBON	12K 5% 1/4W
R51	1-249-417-11	CARBON	1K 5% 1/4W
R52	1-249-417-11	CARBON	1K 5% 1/4W
R53	1-249-417-11	CARBON	1K 5% 1/4W
R54	1-249-431-11	CARBON	15K 5% 1/4W
R55	1-249-437-11	CARBON	47K 5% 1/4W
R56	1-249-431-11	CARBON	15K 5% 1/4W
R57	1-249-431-11	CARBON	15K 5% 1/4W
R58	1-249-439-11	CARBON	68K 5% 1/4W
R60	1-215-465-00	METAL	68K 1% 1/6W
R61	1-215-445-00	METAL	10K 1% 1/6W
R101	1-249-441-11	CARBON	100K 5% 1/4W
R102	1-249-421-11	CARBON	2.2K 5% 1/4W
R104	1-215-469-00	METAL	100K 1% 1/6W
R105	1-215-475-00	METAL	180K 1% 1/6W
R106	1-215-428-00	METAL	2K 1% 1/6W
R107	1-249-435-11	CARBON	33K 5% 1/4W
R108	1-249-430-11	CARBON	12K 5% 1/4W
R109	1-249-417-11	CARBON	1K 5% 1/4W
R110	1-249-441-11	CARBON	100K 5% 1/4W
R111	1-249-417-11	CARBON	1K 5% 1/4W
R112	1-249-417-11	CARBON	1K 5% 1/4W
R113	1-247-903-00	CARBON	1M 5% 1/4W
R114	1-249-419-11	CARBON	1.5K 5% 1/4W
R115	1-249-419-11	CARBON	1.5K 5% 1/4W
R116	1-249-424-11	CARBON	3.9K 5% 1/4W
R117	1-249-419-11	CARBON	1.5K 5% 1/4W
R118	1-215-421-00	METAL	1K 1% 1/6W
R119	1-249-405-11	CARBON	100 5% 1/4W
R120	1-249-405-11	CARBON	100 5% 1/4W
R121	1-249-409-11	CARBON	220 5% 1/4W
R122	1-215-425-00	METAL	1.5K 1% 1/6W
R123	1-249-429-11	CARBON	10K 5% 1/4W
R124	1-249-429-11	CARBON	10K 5% 1/4W
R125	1-249-422-11	CARBON	2.7K 5% 1/4W
R127	1-215-445-00	METAL	10K 1% 1/6W
R128	1-215-445-00	METAL	10K 1% 1/6W
R136	1-215-477-00	METAL	220K 1% 1/6W
R137	1-249-417-11	CARBON	1K 5% 1/4W
R138	1-249-441-11	CARBON	100K 5% 1/4W
R140	1-249-429-11	CARBON	10K 5% 1/4W
R141	1-215-469-00	METAL	100K 1% 1/6W



# BI BK

Ref.No.	Part No.	Description			Remark	Ref.No.	Part No.	Description			Remark
R142	1-215-460-00	METAL	43K	1%	1/6W	R322	1-215-425-00	METAL	1.5K	1%	1/6W
R143	1-215-478-00	METAL	240K	1%	1/6W	R323	1-249-429-11	CARBON	10K	5%	1/4W
R144	1-249-434-11	CARBON	27K	5%	1/4W	R324	1-249-429-11	CARBON	10K	5%	1/4W
R145	1-249-429-11	CARBON	10K	5%	1/4W	R325	1-249-422-11	CARBON	2.7K	5%	1/4W
R146	1-249-429-11	CARBON	10K	5%	1/4W	R327	1-215-445-00	METAL	10K	1%	1/6W
R147	1-249-405-11	CARBON	100	5%	1/4W	R328	1-215-445-00	METAL	10K	1%	1/6W
R150	1-249-405-11	CARBON	100	5%	1/4W	R336	1-215-477-00	METAL	220K	1%	1/6W
R201	1-249-441-11	CARBON	100K	5%	1/4W	R337	1-249-417-11	CARBON	1K	5%	1/4W
R202	1-249-421-11	CARBON	2.2K	5%	1/4W	R338	1-249-441-11	CARBON	100K	5%	1/4W
R204	1-215-469-00	METAL	100K	1%	1/6W	R340	1-249-429-11	CARBON	10K	5%	1/4W
R205	1-215-475-00	METAL	180K	1%	1/6W	R341	1-215-469-00	METAL	100K	1%	1/6W
R206	1-215-428-00	METAL	2K	1%	1/6W	R342	1-215-460-00	METAL	43K	1%	1/6W
R207	1-249-435-11	CARBON	33K	5%	1/4W	R343	1-215-478-00	METAL	240K	1%	1/6W
R208	1-249-430-11	CARBON	12K	5%	1/4W	R344	1-249-434-11	CARBON	27K	5%	1/4W
R209	1-249-417-11	CARBON	1K	5%	1/4W	R345	1-249-429-11	CARBON	10K	5%	1/4W
R210	1-249-441-11	CARBON	100K	5%	1/4W	R346	1-249-429-11	CARBON	10K	5%	1/4W
R211	1-249-417-11	CARBON	1K	5%	1/4W	R347	1-249-405-11	CARBON	100	5%	1/4W
R212	1-249-417-11	CARBON	1K	5%	1/4W	R350	1-249-405-11	CARBON	100	5%	1/4W
R213	1-247-903-00	CARBON	1M	5%	1/4W						
R214	1-249-419-11	CARBON	1.5K	5%	1/4W						
R215	1-249-419-11	CARBON	1.5K	5%	1/4W						
R216	1-249-424-11	CARBON	3.9K	5%	1/4W						
R217	1-249-419-11	CARBON	1.5K	5%	1/4W						
R218	1-215-421-00	METAL	1K	1%	1/6W						
R219	1-249-405-11	CARBON	100	5%	1/4W						
R220	1-249-405-11	CARBON	100	5%	1/4W						
R221	1-249-409-11	CARBON	220	5%	1/4W						
R222	1-215-425-00	METAL	1.5K	1%	1/6W						
R223	1-249-429-11	CARBON	10K	5%	1/4W						
R224	1-249-429-11	CARBON	10K	5%	1/4W						
R225	1-249-422-11	CARBON	2.7K	5%	1/4W						
R227	1-215-445-00	METAL	10K	1%	1/6W						
R228	1-215-445-00	METAL	10K	1%	1/6W						
R236	1-215-477-00	METAL	220K	1%	1/6W						
R237	1-249-417-11	CARBON	1K	5%	1/4W						
R238	1-249-441-11	CARBON	100K	5%	1/4W						
R240	1-249-429-11	CARBON	10K	5%	1/4W						
R241	1-215-469-00	METAL	100K	1%	1/6W						
R242	1-215-460-00	METAL	43K	1%	1/6W						
R243	1-215-478-00	METAL	240K	1%	1/6W						
R244	1-249-434-11	CARBON	27K	5%	1/4W						
R245	1-249-429-11	CARBON	10K	5%	1/4W						
R246	1-249-429-11	CARBON	10K	5%	1/4W						
R247	1-249-405-11	CARBON	100	5%	1/4W						
R250	1-249-405-11	CARBON	100	5%	1/4W						
R301	1-249-441-11	CARBON	100K	5%	1/4W						
R302	1-249-421-11	CARBON	2.2K	5%	1/4W						
R304	1-215-469-00	METAL	100K	1%	1/6W						
R305	1-215-475-00	METAL	180K	1%	1/6W						
R306	1-215-428-00	METAL	2K	1%	1/6W						
R307	1-249-435-11	CARBON	33K	5%	1/4W						
R308	1-249-430-11	CARBON	12K	5%	1/4W						
R309	1-249-417-11	CARBON	1K	5%	1/4W						
R310	1-249-441-11	CARBON	100K	5%	1/4W						
R311	1-249-417-11	CARBON	1K	5%	1/4W						
R312	1-249-417-11	CARBON	1K	5%	1/4W						
R313	1-247-903-00	CARBON	1M	5%	1/4W						
R314	1-249-419-11	CARBON	1.5K	5%	1/4W						
R315	1-249-419-11	CARBON	1.5K	5%	1/4W						
R316	1-249-424-11	CARBON	3.9K	5%	1/4W						
R317	1-249-419-11	CARBON	1.5K	5%	1/4W						
R318	1-215-421-00	METAL	1K	1%	1/6W						
R319	1-249-405-11	CARBON	100	5%	1/4W						
R320	1-249-405-11	CARBON	100	5%	1/4W						
R321	1-249-409-11	CARBON	220	5%	1/4W						

## 7. ELECTRICAL PARTS LIST

7-15

Ref.No.	Part No.	Description				Remark	Ref.No.	Part No.	Description				Remark
R12	1-249-437-11	CARBON	47K	5%	1/4W		R225	1-249-429-11	CARBON	10K	5%	1/4W	
R13	1-249-423-11	CARBON	3.3K	5%	1/4W		R226	1-249-429-11	CARBON	10K	5%	1/4W	
R14	1-249-431-11	CARBON	15K	5%	1/4W		R227	1-249-417-11	CARBON	1K	5%	1/4W	
R16	1-215-901-00	METAL OXIDE	33K	5%	2W	F	R300	1-249-405-11	CARBON	100	5%	1/4W	
R17	1-215-901-00	METAL OXIDE	33K	5%	2W	F	R301	1-215-409-00	METAL	330	1%	1/6W	
R20	1-216-461-00	METAL OXIDE	5.6K	5%	2W	F	R302	1-249-419-11	CARBON	1.5K	5%	1/4W	
R21	1-215-471-00	METAL	120K	1%	1/6W		R303	1-215-435-00	METAL	3.9K	1%	1/6W	
R22	1-215-470-00	METAL	110K	1%	1/6W		R304	1-249-422-11	CARBON	2.7K	5%	1/4W	
R23	1-215-445-00	METAL	10K	1%	1/6W		R305	1-249-405-11	CARBON	100	5%	1/4W	
R24	1-215-439-00	METAL	5.6K	1%	1/6W		R306	1-215-412-00	METAL	430	1%	1/6W	
R25	1-215-445-00	METAL	10K	1%	1/6W		R307	1-215-467-00	METAL	82K	1%	1/6W	
R26	1-215-445-00	METAL	10K	1%	1/6W		R308	1-215-467-00	METAL	82K	1%	1/6W	
R31	1-215-464-00	CARBON	62K	5%	1/4W		R309	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R32	1-249-440-11	CARBON	82K	5%	1/4W		R310	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R33	1-249-430-11	CARBON	12K	5%	1/4W		R311	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R34	1-249-429-11	CARBON	10K	5%	1/4W		R312	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R35	1-249-417-11	CARBON	1K	5%	1/4W		R313	1-249-405-11	CARBON	100	5%	1/4W	
R37	1-249-415-11	CARBON	680	5%	1/4W		R314	1-215-401-11	METAL	150	1%	1/6W	
R38	1-249-441-11	CARBON	100K	5%	1/4W		R315	1-215-865-11	METAL OXIDE	220	5%	1W	F
R100	1-249-405-11	CARBON	100	5%	1/4W		R316	1-215-439-00	METAL	5.6K	1%	1/6W	
R101	1-215-409-00	METAL	330	1%	1/6W		R317	1-215-481-00	METAL	330K	1%	1/6W	
R102	1-249-419-11	CARBON	1.5K	5%	1/4W		R319	1-249-431-11	CARBON	15K	5%	1/4W	
R103	1-215-435-00	METAL	3.9K	1%	1/6W		R320	1-249-405-11	CARBON	100	5%	1/4W	
R104	1-249-422-11	CARBON	2.7K	5%	1/4W		R324	1-249-423-11	CARBON	3.3K	5%	1/4W	
R105	1-249-405-11	CARBON	100	5%	1/4W		R325	1-249-429-11	CARBON	10K	5%	1/4W	
R106	1-215-412-00	METAL	430	1%	1/6W		R326	1-249-429-11	CARBON	10K	5%	1/4W	
R107	1-215-467-00	METAL	82K	1%	1/6W		R327	1-249-417-11	CARBON	1K	5%	1/4W	
R108	1-215-467-00	METAL	82K	1%	1/6W								
R109	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F							
R110	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F							
R111	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F							
R112	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F							
R113	1-249-405-11	CARBON	100	5%	1/4W								
R114	1-215-401-11	METAL	150	1%	1/6W								
R115	1-215-865-11	METAL OXIDE	220	5%	1W	F							
R116	1-215-439-00	METAL	5.6K	1%	1/6W								
R117	1-215-481-00	METAL	330K	1%	1/6W								
R119	1-249-431-11	CARBON	15K	5%	1/4W								
R120	1-249-405-11	CARBON	100	5%	1/4W								
R124	1-249-423-11	CARBON	3.3K	5%	1/4W								
R125	1-249-429-11	CARBON	10K	5%	1/4W								
R126	1-249-429-11	CARBON	10K	5%	1/4W								
R127	1-249-417-11	CARBON	1K	5%	1/4W								
R200	1-249-405-11	CARBON	100	5%	1/4W								
R201	1-215-409-00	METAL	330	1%	1/6W								
R202	1-249-419-11	CARBON	1.5K	5%	1/4W								
R203	1-215-435-00	METAL	3.9K	1%	1/6W								
R204	1-249-422-11	CARBON	2.7K	5%	1/4W								
R205	1-249-405-11	CARBON	100	5%	1/4W								
R206	1-215-412-00	METAL	430	1%	1/6W								
R207	1-215-467-00	METAL	82K	1%	1/6W								
R208	1-215-467-00	METAL	82K	1%	1/6W								
R209	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F							
R210	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F							
R211	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F							
R212	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F							
R213	1-249-405-11	CARBON	100	5%	1/4W								
R214	1-215-401-11	METAL	150	1%	1/6W								
R215	1-215-865-11	METAL OXIDE	220	5%	1W	F							
R216	1-215-439-00	METAL	5.6K	1%	1/6W								
R217	1-215-481-00	METAL	330K	1%	1/6W								
R219	1-249-431-11	CARBON	15K	5%	1/4W								
R220	1-249-405-11	CARBON	100	5%	1/4W								
R224	1-249-423-11	CARBON	3.3K	5%	1/4W								
			</										



BG P

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R13	1-215-462-00	METAL	51K 1% 1/6W	R81	1-249-422-11	CARBON	2.7K 5% 1/4W
R14	1-249-426-11	CARBON	5.6K 5% 1/4W	R82	1-247-903-00	CARBON	1M 5% 1/4W
R15	1-247-903-00	CARBON	1M 5% 1/4W	R83	1-249-420-11	CARBON	1.8K 5% 1/4W
R16	1-215-477-00	METAL	220K 1% 1/6W	R84	1-249-405-11	CARBON	100 5% 1/4W
R17	1-249-429-11	CARBON	10K 5% 1/4W	R85	1-247-866-11	CARBON	30K 5% 1/4W
R18	1-249-429-11	CARBON	10K 5% 1/4W	R86	1-215-445-00	METAL	10K 1% 1/6W
R19	1-249-417-11	CARBON	1K 5% 1/4W	R87	1-249-422-11	CARBON	2.7K 5% 1/4W
R20	1-215-421-00	METAL	1K 1% 1/6W	R88	1-215-430-00	METAL	2.4K 1% 1/6W
R21	1-215-421-00	METAL	1K 1% 1/6W	R89	1-215-443-00	METAL	8.2K 1% 1/6W
R22	1-249-441-11	CARBON	100K 5% 1/4W	R90	1-249-430-11	CARBON	12K 5% 1/4W
R23	1-215-409-00	METAL	330 1% 1/6W	R91	1-249-405-11	CARBON	100 5% 1/4W
R24	1-215-380-00	METAL	20 1% 1/6W	R92	1-247-830-11	CARBON	910 5% 1/4W
R25	1-215-380-00	METAL	20 1% 1/6W	R93	1-215-421-00	METAL	1K 1% 1/6W
R26	1-215-409-00	METAL	330 1% 1/6W	R94	1-249-422-11	CARBON	2.7K 5% 1/4W
R27	1-249-429-11	CARBON	10K 5% 1/4W	R98	1-249-422-11	CARBON	2.7K 5% 1/4W
R28	1-249-417-11	CARBON	1K 5% 1/4W	R99	1-249-422-11	CARBON	2.7K 5% 1/4W
R29	1-215-418-00	METAL	750 1% 1/6W	R161	1-215-438-00	METAL	5.1K 1% 1/6W
R30	1-249-422-11	CARBON	2.7K 5% 1/4W	R162	1-249-431-11	CARBON	15K 5% 1/4W
R31	1-249-405-11	CARBON	100 5% 1/4W	R163	1-249-417-11	CARBON	1K 5% 1/4W
R32	1-249-422-11	CARBON	2.7K 5% 1/4W	R164	1-215-435-00	METAL	3.9K 1% 1/6W
R33	1-249-429-11	CARBON	10K 5% 1/4W	R165	1-249-422-11	CARBON	2.7K 5% 1/4W
R34	1-249-428-11	CARBON	8.2K 5% 1/4W	R166	1-249-422-11	CARBON	2.7K 5% 1/4W
R35	1-249-417-11	CARBON	1K 5% 1/4W	R167	1-215-409-00	METAL	330 1% 1/6W
R36	1-249-422-11	CARBON	2.7K 5% 1/4W	R168	1-215-411-00	METAL	390 1% 1/6W
R37	1-249-405-11	CARBON	100 5% 1/4W	R169	1-215-427-00	METAL	1.8K 1% 1/6W
R40	1-249-425-11	CARBON	4.7K 5% 1/4W	R170	1-249-425-11	CARBON	4.7K 5% 1/4W
R41	1-249-422-11	CARBON	2.7K 5% 1/4W	R171	1-215-436-00	METAL	4.3K 1% 1/6W
R42	1-249-417-11	CARBON	1K 5% 1/4W	R172	1-249-431-11	CARBON	15K 5% 1/4W
R43	1-249-417-11	CARBON	1K 5% 1/4W	R173	1-249-417-11	CARBON	1K 5% 1/4W
R44	1-249-431-11	CARBON	15K 5% 1/4W	R174	1-215-435-00	METAL	3.9K 1% 1/6W
R45	1-249-423-11	CARBON	3.3K 5% 1/4W	R175	1-249-422-11	CARBON	2.7K 5% 1/4W
R46	1-249-417-11	CARBON	1K 5% 1/4W	R176	1-249-422-11	CARBON	2.7K 5% 1/4W
R47	1-249-423-11	CARBON	3.3K 5% 1/4W	R177	1-215-409-00	METAL	330 1% 1/6W
R48	1-249-422-11	CARBON	2.7K 5% 1/4W	R178	1-215-414-00	METAL	510 1% 1/6W
R49	1-249-405-11	CARBON	100 5% 1/4W	R179	1-215-422-00	METAL	1.1K 1% 1/6W
R50	1-249-422-11	CARBON	2.7K 5% 1/4W	R180	1-249-425-11	CARBON	4.7K 5% 1/4W
R51	1-247-903-00	CARBON	1M 5% 1/4W	R181	1-215-380-00	METAL	20 1% 1/6W
R52	1-247-866-11	CARBON	30K 5% 1/4W	R182	1-215-380-00	METAL	20 1% 1/6W
R53	1-215-445-00	METAL	10K 1% 1/6W	R183	1-249-433-11	CARBON	22K 5% 1/4W
R54	1-249-420-11	CARBON	1.8K 5% 1/4W	R184	1-249-425-11	CARBON	4.7K 5% 1/4W
R55	1-249-422-11	CARBON	2.7K 5% 1/4W	R201	1-249-437-11	CARBON	47K 5% 1/4W
R56	1-249-405-11	CARBON	100 5% 1/4W	R202	1-249-429-11	CARBON	10K 5% 1/4W
R57	1-249-422-11	CARBON	2.7K 5% 1/4W	R203	1-249-435-11	CARBON	33K 5% 1/4W
R58	1-249-422-11	CARBON	2.7K 5% 1/4W	R204	1-247-872-11	CARBON	51K 5% 1/4W
R59	1-249-422-11	CARBON	2.7K 5% 1/4W				
R61	1-249-422-11	CARBON	2.7K 5% 1/4W				
R62	1-249-417-11	CARBON	1K 5% 1/4W				
R63	1-249-417-11	CARBON	1K 5% 1/4W				
R64	1-249-431-11	CARBON	15K 5% 1/4W				
R65	1-249-423-11	CARBON	3.3K 5% 1/4W				
R66	1-249-417-11	CARBON	1K 5% 1/4W				
R67	1-249-423-11	CARBON	3.3K 5% 1/4W				
R68	1-249-422-11	CARBON	2.7K 5% 1/4W				
R69	1-249-405-11	CARBON	100 5% 1/4W				
R70	1-249-422-11	CARBON	2.7K 5% 1/4W				
R71	1-247-903-00	CARBON	1M 5% 1/4W				
R72	1-247-866-11	CARBON	30K 5% 1/4W				
R73	1-215-445-00	METAL	10K 1% 1/6W				
R74	1-249-420-11	CARBON	1.8K 5% 1/4W				
R75	1-249-422-11	CARBON	2.7K 5% 1/4W				
R76	1-249-405-11	CARBON	100 5% 1/4W				
R77	1-249-422-11	CARBON	2.7K 5% 1/4W				
R78	1-249-422-11	CARBON	2.7K 5% 1/4W				
R79	1-249-422-11	CARBON	2.7K 5% 1/4W				
R80	1-249-405-11	CARBON	100 5% 1/4W				

VARIABLE RESISTOR

RV1	1-237-514-21	RES, ADJ, CERMET 500
RV2	1-237-508-21	RES, ADJ, CERMET 500K
RV3	1-237-498-21	RES, ADJ, CERMET 200
RV4	1-237-500-11	RES, ADJ, CERMET 1K
RV5	1-237-500-11	RES, ADJ, CERMET 1K

RV21	1-237-517-21	RES, ADJ, CERMET 5K
RV22	1-237-517-21	RES, ADJ, CERMET 5K

SWITCH

S1	1-554-076-21	SWITCH, SLIDE
----	--------------	---------------

\*\*\*\*\*

\*1-627-670-11 P BOARD  
\*\*\*\*\*

$\Delta$  1-439-395-11 TRANSFORMER ASSY, FLYBACK

\*4-341-752-01 EYELET



Ref.No. Part No. Description

\*1-617-895-11 QA BOARD  
\*\*\*\*\*

## CAPACITOR

C1	1-106-367-00	MYLAR	0.01MF	10%	200V
C2	1-124-013-11	ELECT	100MF	20%	16V
C3	1-101-004-00	CERAMIC	0.01MF		50V
C4	1-106-367-00	MYLAR	0.01MF	10%	200V
C5	1-124-013-11	ELECT	100MF	20%	16V
C6	1-101-004-00	CERAMIC	0.01MF		50V
C7	1-106-367-00	MYLAR	0.01MF	10%	200V
C8	1-124-013-11	ELECT	100MF	20%	16V
C9	1-101-004-00	CERAMIC	0.01MF		50V
C10	1-102-951-00	CERAMIC	15PF	5%	50V
C11	1-102-951-00	CERAMIC	15PF	5%	50V
C12	1-102-951-00	CERAMIC	15PF	5%	50V

## RESISTOR

R1	1-215-449-00	METAL	15K	1%	1/6W
R2	1-215-449-00	METAL	15K	1%	1/6W
R3	1-249-439-11	CARBON	68K	5%	1/4W

## SWITCH

S1	1-554-076-21	SWITCH, SLIDE
S2	1-554-076-21	SWITCH, SLIDE
S3	1-554-076-21	SWITCH, SLIDE

\*\*\*\*\*

\*1-618-786-11 QB BOARD  
\*\*\*\*\*

## CAPACITOR

C1	1-108-692-81	MYLAR	0.01MF	10%	200V
C2	1-124-013-11	ELECT	100MF	20%	16V
C3	1-101-004-00	CERAMIC	0.01MF		50V
C4	1-108-692-81	MYLAR	0.01MF	10%	200V
C5	1-124-013-11	ELECT	100MF	20%	16V
C6	1-101-004-00	CERAMIC	0.01MF		50V
C7	1-108-692-81	MYLAR	0.01MF	10%	200V
C8	1-124-013-11	ELECT	100MF	20%	16V
C9	1-101-004-00	CERAMIC	0.01MF		50V
C10	1-102-951-00	CERAMIC	15PF	5%	50V
C11	1-102-951-00	CERAMIC	15PF	5%	50V
C12	1-102-951-00	CERAMIC	15PF	5%	50V

## RESISTOR

R1	1-215-449-00	METAL	15K	1%	1/6W
R2	1-215-449-00	METAL	15K	1%	1/6W
R3	1-215-449-00	METAL	15K	1%	1/6W

## SWITCH

S1	1-554-076-21	SWITCH, SLIDE
S2	1-554-076-21	SWITCH, SLIDE
S3	1-554-076-21	SWITCH, SLIDE

Remark

Ref.No. Part No.

Description

Remark

\*1-617-885-11 GC BOARD  
\*\*\*\*\*

## CAPACITOR

C1	1-123-330-00	ELECT	22MF	20%	25V
C2	1-123-330-00	ELECT	22MF	20%	25V
C3	1-123-330-00	ELECT	22MF	20%	25V
C4	1-123-330-00	ELECT	22MF	20%	25V
C5	1-123-330-00	ELECT	22MF	20%	25V
C6	1-123-330-00	ELECT	22MF	20%	25V
C7	1-123-330-00	ELECT	22MF	20%	25V
C8	1-123-330-00	ELECT	22MF	20%	25V
C9	1-123-330-00	ELECT	22MF	20%	25V
C12	1-101-004-00	CERAMIC	0.01MF		50V
C14	1-101-004-00	CERAMIC	0.01MF		50V
C16	1-101-004-00	CERAMIC	0.01MF		50V
C17	1-101-004-00	CERAMIC	0.01MF		50V
C18	1-101-004-00	CERAMIC	0.01MF		50V

## CONNECTOR

GC1	*1-566-044-11	PIN, CONNECTOR 5P
GC2	*1-566-057-11	PIN, CONNECTOR 5P
GC3	*1-566-044-11	PIN, CONNECTOR 5P

## IC

IC1	8-759-179-12	IC UPC7912H
IC2	8-759-179-12	IC UPC7912H
IC3	8-759-700-06	IC NJM7812B
IC4	8-759-700-06	IC NJM7812B

\*\*\*\*\*

\*A-1316-089-A GA BOARD, COMPLETE (BVM-1315 ONLY)  
\*\*\*\*\*

*2-990-241-01	HOLDER (A), PLUG
*3-337-402-01	BAND, BINDING
*4-347-706-00	HEAT SINK (TR)
*4-371-803-01	COVER, FUSE HOLDER
*4-371-879-02	COVER, AC SELECT
4-379-403-01	SPACER (G1), POLISHING
*4-379-408-01	INSULATOR (G3)
*4-379-409-01	NUT, PLATE
4-379-410-01	SPACER (G2), POLISHING
*4-379-430-01	PANEL, POWER
*4-386-847-01	HEAT SINK (S.R.T)
*4-386-848-01	BAND (S.R.T)
4-601-466-11	COVER, 3P INLET

## CAPACITOR

C1	1-124-024-00	ELECT	4.7MF	20%	350V
C2	1-124-024-00	ELECT	4.7MF	20%	350V
C3	1-162-117-00	CERAMIC	100PF	10%	500V
C4	1-162-117-00	CERAMIC	100PF	10%	500V
C5	1-162-117-00	CERAMIC	100PF	10%	500V
C6	1-162-117-00	CERAMIC	100PF	10%	500V
C7	1-124-128-00	ELECT	470MF	20%	25V
C8	1-124-525-11	ELECT	1000MF	20%	25V
C9	1-124-128-00	ELECT	470MF	20%	25V
C10	1-124-525-11	ELECT	1000MF	20%	25V
C11	1-124-128-00	ELECT	470MF	20%	25V
C12	1-124-129-00	ELECT	2200MF	20%	25V
C13	1-124-128-00	ELECT	470MF	20%	25V

7. ELECTRICAL PARTS LIST


GA

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifique.

The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C14	1-124-129-00	ELECT	2200MF	C79	1-162-599-12	CERAMIC	0.0047MF
C15	1-123-985-51	ELECT	1000MF	C80	1-125-295-00	ELECT(BLOCK)	560MF
C16	1-123-874-00	ELECT	470MF	C81	1-125-295-00	ELECT(BLOCK)	560MF
C17	1-106-375-12	MYLAR	0.022MF	C82	1-123-369-00	ELECT	4.7MF
C18	1-108-638-11	MYLAR	0.1MF	C83	1-101-004-00	CERAMIC	0.01MF
C19	1-102-030-00	CERAMIC	330PF	C84	$\Delta$ 1-136-311-61	FILM	0.47MF
C20	1-162-117-00	CERAMIC	100PF	C85	$\Delta$ 1-162-578-51	CERAMIC	0.0047MF
C21	1-102-038-00	CERAMIC	0.001MF	C86	$\Delta$ 1-162-578-51	CERAMIC	0.0047MF
C22	1-162-117-00	CERAMIC	100PF	C87	$\Delta$ 1-162-578-51	CERAMIC	0.0047MF
C23	1-106-375-12	MYLAR	0.022MF	C88	$\Delta$ 1-162-578-51	CERAMIC	0.0047MF
C24	1-108-638-11	MYLAR	0.1MF	C89	$\Delta$ 1-136-311-61	FILM	0.47MF
C25	1-123-380-00	ELECT	1MF	C90	1-136-159-00	FILM	0.033MF
C26	1-101-361-00	CERAMIC	150PF	C92	1-136-159-00	FILM	0.033MF
C27	1-101-361-00	CERAMIC	150PF	C94	1-102-038-00	CERAMIC	0.001MF
C28	1-123-356-00	ELECT	10MF	C95	1-136-173-00	FILM	0.47MF
C29	1-123-332-00	ELECT	47MF	C96	1-102-050-00	CERAMIC	0.01MF
C30	1-162-117-00	CERAMIC	100PF	C97	1-136-173-00	FILM	0.47MF
C31	1-102-030-00	CERAMIC	330PF	C98	1-136-173-00	FILM	0.47MF
C32	1-123-380-00	ELECT	1MF	C99	1-102-050-00	CERAMIC	0.01MF
C33	1-101-361-00	CERAMIC	150PF	C100	1-162-117-00	CERAMIC	100PF
C34	1-101-361-00	CERAMIC	150PF	C101	1-162-117-00	CERAMIC	100PF
C35	1-123-380-00	ELECT	1MF	C102	1-136-332-11	FILM	0.01MF
C36	1-123-332-00	ELECT	47MF	C103	1-136-332-11	FILM	0.01MF
C37	1-130-734-00	FILM	0.0068MF				
C38	1-136-165-00	FILM	0.1MF				
C39	1-136-165-00	FILM	0.1MF				
C40	1-123-381-00	ELECT	2.2MF				
C41	1-102-038-00	CERAMIC	0.001MF				
C42	1-136-165-00	FILM	0.1MF				
C43	1-106-375-12	MYLAR	0.022MF				
C44	1-123-356-00	ELECT	10MF				
C45	1-162-132-00	CERAMIC	270PF				
C46	1-123-356-00	ELECT	10MF				
C47	1-136-173-00	FILM	0.47MF				
C48	1-136-173-00	FILM	0.47MF				
C49	1-123-356-00	ELECT	10MF				
C50	1-101-006-00	CERAMIC	0.047MF				
C51	1-101-006-00	CERAMIC	0.047MF				
C52	1-101-006-00	CERAMIC	0.047MF				
C53	1-101-006-00	CERAMIC	0.047MF				
C54	1-101-006-00	CERAMIC	0.047MF				
C55	1-123-356-00	ELECT	10MF				
C56	1-130-808-00	FILM	0.22MF				
C57	1-123-356-00	ELECT	10MF				
C58	1-123-379-00	ELECT	0.47MF				
C59	1-130-734-00	FILM	0.0068MF				
C60	1-102-228-00	CERAMIC	470PF				
C61	1-102-228-00	CERAMIC	470PF				
C62	1-102-228-00	CERAMIC	470PF				
C63	1-102-228-00	CERAMIC	470PF				
C64	1-124-024-00	ELECT	4.7MF				
C65	1-124-024-00	ELECT	4.7MF				
C66	1-162-117-00	CERAMIC	100PF				
C67	1-162-117-00	CERAMIC	100PF				
C68	1-162-117-00	CERAMIC	100PF				
C69	1-124-562-11	ELECT	47MF				
C70	1-124-805-51	ELECT	100MF				
C71	1-162-117-00	CERAMIC	100PF				
C72	1-124-562-11	ELECT	47MF				
C73	1-124-805-51	ELECT	100MF				
C74	1-123-333-00	ELECT	100MF				
C75	1-123-333-00	ELECT	100MF				
C76	$\Delta$ 1-161-953-51	CERAMIC	0.0047MF				
C77	$\Delta$ 1-161-953-51	CERAMIC	0.0047MF				
C78	1-162-599-12	CERAMIC	0.0047MF				
				DIODE			
				D1	8-719-912-51	DIODE ESAC25-04C	
				D2	8-719-918-73	DIODE ESAC25-04N	
				D3	8-719-901-73	DIODE ESA025-04D	
				D4	8-719-901-73	DIODE ESA025-04D	
				D5	8-719-907-24	DIODE ESAC31-02D	
				D6	8-719-907-24	DIODE ESAC31-02D	
				D7	8-719-924-06	DIODE ERC24-06S	
				D8	8-719-300-52	DIODE CTU-38R	
				D9	8-719-300-53	DIODE CTU-38S	
				D10	8-719-912-51	DIODE ESAC25-04C	
				D11	8-719-918-73	DIODE ESAC25-04N	
				D12	8-719-911-19	DIODE 1SS119	
				D13	8-719-911-19	DIODE 1SS119	
				D14	8-719-100-57	DIODE RD10E-B2	
				D15	8-719-911-19	DIODE 1SS119	
				D16	8-719-911-19	DIODE 1SS119	
				D17	8-719-911-19	DIODE 1SS119	
				D18	8-719-100-35	DIODE RD5.6E-B2	
				D20	8-719-200-02	DIODE 10E2	
				D21	$\Delta$ 8-719-300-07	DIODE RB406N	
				D22	8-759-157-40	IC UPC574J	
				D23	8-719-911-19	DIODE 1SS119	
				D24	8-719-100-57	DIODE RD10E-B2	
				D25	8-719-911-19	DIODE 1SS119	
				D26	8-719-003-08	THYRISTOR CR3CM-8	
				D27	8-719-981-00	DIODE ERC81-004	
				D28	8-719-981-00	DIODE ERC81-004	
				D29	8-719-981-00	DIODE ERC81-004	
				D30	8-719-981-00	DIODE ERC81-004	
				D31	8-719-924-06	DIODE ERC24-06S	
				D32	8-719-924-06	DIODE ERC24-06S	
				CONNECTOR			
				GA1	*1-506-348-XX	PIN, CONNECTOR 3P	
				GA2	*1-506-371-00	PIN, CONNECTOR 2P	
				GA3	*1-508-768-00	6P PLUG	
				GA4	*1-508-786-00	2P PLUG (M)	
				GA5	*1-566-055-11	PIN, CONNECTOR 3P	



Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

GA

## 7. ELECTRICAL PARTS LIST

GA GB C

Les composants identifiés par  
une trame et une marque  $\Delta$   
sont critiques pour la sécurité.  
Ne les remplacer que par une  
pièce portant le numéro spécifié.

The components identified by  
shading and mark  $\Delta$  are critical  
for safety.  
Replace only with part number  
specified.

Ref.No.	Part No.	Description	Remark
R98	1-215-904-11	METAL OXIDE 100K 5% 2W	F

## VARIABLE RESISTOR

RV1	1-237-514-21	RES, ADJ, CERMET 500
RV2	1-237-515-21	RES, ADJ, CERMET 1K

## RELAY

RY1	$\Delta$ 1-515-491-11	RELAY (POWER)
-----	-----------------------	---------------

## TRANSFORMER

T1	$\Delta$ 1-448-433-11	TRANSFORMER, CONVERTER (S.R.T)
T2	$\Delta$ 1-447-106-11	TRANSFORMER, DRIVE
T3	$\Delta$ 1-421-624-12	TRANSFORMER, CURRENT
T4	$\Delta$ 1-447-426-12	TRANSFORMER, CONVERTER
T5	$\Delta$ 1-448-432-12	TRANSFORMER, CONVERTER (S.R.T)
T6	$\Delta$ 1-447-106-11	TRANSFORMER, DRIVE
T7	$\Delta$ 1-421-624-12	TRANSFORMER, CURRENT

## THERMISTOR

TH1	$\Delta$ 1-800-820-12	THERMISTOR, POWER
THP1	$\Delta$ 1-806-387-11	THERMISTOR (POSITIVE)
THP2	$\Delta$ 1-800-686-32	THERMISTOR (POSITIVE)

\*\*\*\*\*  
\*1-627-679-11 GB BOARD (BVM-1315/BVM-1415P ONLY)  
\*\*\*\*\*

\*1-617-884-11 GB BOARD (BVM-1415PM ONLY)  
\*\*\*\*\*

## CAPACITOR

C1	1-123-380-00	ELECT 1MF 20% 50V
C2	1-123-380-00	ELECT 1MF 20% 50V

## DIODE

D1	8-719-911-19	DIODE 1SS119
D2	8-719-110-08	DIODE RD8.2ES-B2
D3	8-719-911-19	DIODE 1SS119
D4	8-719-911-19	DIODE 1SS119
D5	8-719-911-19	DIODE 1SS119
D6	8-719-110-08	DIODE RD8.2ES-B2
D7	8-719-812-41	DIODE TLR124
D8	8-719-911-19	DIODE 1SS119
D9	8-719-911-19	DIODE 1SS119
D10	8-719-812-41	DIODE TLR124
D11	8-719-110-08	DIODE RD8.2ES-B2
D12	8-719-911-19	DIODE 1SS119
D13	8-719-911-19	DIODE 1SS119
D14	8-719-911-19	DIODE 1SS119
D15	8-719-911-19	DIODE 1SS119
D16	8-719-911-19	DIODE 1SS119
D17	8-719-110-08	DIODE RD8.2ES-B2
D18	8-719-911-19	DIODE 1SS119
D19	8-719-911-19	DIODE 1SS119

## CONNECTOR

GA1	*1-506-603-11	PLUG, L TYPE (2.0MM PITCH) 10P
-----	---------------	--------------------------------

## TRANSISTOR

Q1	8-729-600-60	TRANSISTOR 2SA1115P
Q2	8-729-178-54	TRANSISTOR 2SC2785
Q3	8-729-600-60	TRANSISTOR 2SA1115P
Q4	8-729-178-54	TRANSISTOR 2SC2785
Q5	8-729-600-60	TRANSISTOR 2SA1115P
Q6	8-729-600-60	TRANSISTOR 2SA1115P
Q7	8-729-600-60	TRANSISTOR 2SA1115P
Q8	8-729-178-54	TRANSISTOR 2SC2785
Q9	8-729-600-60	TRANSISTOR 2SA1115P
Q10	8-729-178-54	TRANSISTOR 2SC2785

## RESISTOR

R1	1-249-427-11	CARBON 6.8K 5% 1/4W
R2	1-249-428-11	CARBON 8.2K 5% 1/4W
R3	1-249-429-11	CARBON 10K 5% 1/4W
R4	1-249-427-11	CARBON 6.8K 5% 1/4W
R5	1-249-420-11	CARBON 1.8K 5% 1/4W
R6	1-249-427-11	CARBON 6.8K 5% 1/4W
R7	1-249-420-11	CARBON 1.8K 5% 1/4W
R8	1-249-429-11	CARBON 10K 5% 1/4W
R9	1-249-427-11	CARBON 6.8K 5% 1/4W
R10	1-249-428-11	CARBON 8.2K 5% 1/4W
R11	1-249-424-11	CARBON 3.9K 5% 1/4W
R12	1-249-421-11	CARBON 2.2K 5% 1/4W
R13	1-249-425-11	CARBON 4.7K 5% 1/4W
R14	1-249-421-11	CARBON 2.2K 5% 1/4W
R15	1-249-424-11	CARBON 3.9K 5% 1/4W
R16	1-249-421-11	CARBON 2.2K 5% 1/4W
R17	1-249-425-11	CARBON 4.7K 5% 1/4W
R18	1-249-421-11	CARBON 2.2K 5% 1/4W
R19	1-249-429-11	CARBON 10K 5% 1/4W
R20	1-249-429-11	CARBON 10K 5% 1/4W
R21	1-249-429-11	CARBON 10K 5% 1/4W
R22	1-249-423-11	CARBON 3.3K 5% 1/4W
R23	1-249-423-11	CARBON 3.3K 5% 1/4W
R24	1-249-429-11	CARBON 10K 5% 1/4W
R25	1-249-429-11	CARBON 10K 5% 1/4W

\*\*\*\*\*  
\*A-1330-902-A C BOARD, COMPLETE  
\*\*\*\*\*

$\Delta$  1-526-819-11 SOCKET, PICTURE TUBE  
\*4-374-912-01 COVER (MAIN), CV VOL  
\*4-374-913-01 COVER (REAR LID), CV VOL

## CONNECTOR

C1	*1-566-054-11	PIN, CONNECTOR 2P
C2	*1-566-056-11	PIN, CONNECTOR 4P
C3	*1-566-056-11	PIN, CONNECTOR 4P
C4	*1-566-056-11	PIN, CONNECTOR 4P
C5	*1-566-055-11	PIN, CONNECTOR 3P
C6	*1-566-055-11	PIN, CONNECTOR 3P
C7	*1-508-766-00	4P PLUG (M)
C8	*1-508-786-00	2P PLUG (M)

## CAPACITOR

C1	1-162-114-00	CERAMIC 0.0047MF	2KV
C2	1-129-724-00	FILM 0.068MF	10% 630V
C3	1-123-332-00	ELECT 47MF	20% 25V
C4	1-162-114-00	CERAMIC 0.0047MF	2KV
C5	1-162-114-00	CERAMIC 0.0047MF	2KV
C6	1-123-332-00	ELECT 47MF	20% 25V
C7	1-162-114-00	CERAMIC 0.0047MF	2KV



Ref.No. Part No. Description

DIODE

D1 8-719-911-19 DIODE 1SS119  
D2 8-719-911-19 DIODE 1SS119  
D3 8-719-911-19 DIODE 1SS119  
D4 8-719-911-19 DIODE 1SS119

COIL

L1 1-408-414-00 INDUCTOR 27UH  
L2 1-408-414-00 INDUCTOR 27UH  
L3 1-408-414-00 INDUCTOR 27UH

TRANSISTOR

Q1 8-729-804-48 TRANSISTOR 2SC3675  
Q2 8-729-804-48 TRANSISTOR 2SC3675  
Q3 8-729-255-12 TRANSISTOR 2SC2551  
Q4 8-729-178-54 TRANSISTOR 2SC2785  
Q5 8-729-178-54 TRANSISTOR 2SC2785  
  
Q6 8-729-255-12 TRANSISTOR 2SC2551  
Q7 8-729-804-48 TRANSISTOR 2SC3675

RESISTOR

R1 1-202-818-00 SOLID 1K 10% 1/2W  
R2 1-202-818-00 SOLID 1K 10% 1/2W  
R3 1-202-818-00 SOLID 1K 10% 1/2W  
R4 1-249-433-11 CARBON 22K 5% 1/4W  
R5 1-202-818-00 SOLID 1K 10% 1/2W  
  
R6 1-202-818-00 SOLID 1K 10% 1/2W  
R7 1-249-433-11 CARBON 22K 5% 1/4W  
R8 1-202-818-00 SOLID 1K 10% 1/2W  
R9 1-202-818-00 SOLID 1K 10% 1/2W  
R10 1-249-433-11 CARBON 22K 5% 1/4W  
  
R11 1-202-719-00 SOLID 1M 10% 1/2W  
R12 1-202-719-00 SOLID 1M 10% 1/2W  
R13 1-202-735-00 SOLID 22M 10% 1/2W  
R14 1-249-417-11 CARBON 1K 5% 1/4W  
R15 1-202-721-00 SOLID 1.5M 10% 1/2W  
  
R16 1-202-848-00 SOLID 680K 10% 1/2W  
R17 1-249-438-11 CARBON 56K 5% 1/4W  
R18 1-202-719-00 SOLID 1M 10% 1/2W  
R19 1-249-429-11 CARBON 10K 5% 1/4W  
R20 1-249-430-11 CARBON 12K 5% 1/4W  
  
R21 1-249-429-11 CARBON 10K 5% 1/4W  
R22 1-249-427-11 CARBON 6.8K 5% 1/4W  
R23 1-202-725-00 SOLID 3.3M 10% 1/2W  
R24 1-202-734-00 SOLID 18M 10% 1/2W  
R25 1-202-729-00 SOLID 6.8M 10% 1/2W  
  
R26 1-247-887-00 CARBON 220K 5% 1/4W  
R27 1-249-417-11 CARBON 1K 5% 1/4W  
R28 1-202-818-00 SOLID 1K 10% 1/2W  
R29 1-202-818-00 SOLID 1K 10% 1/2W  
R30 1-202-818-00 SOLID 1K 10% 1/2W  
R31 1-249-417-11 CARBON 1K 5% 1/4W

VARIABLE RESISTOR

RV1 1-230-798-11 RES, ADJ, METAL GLAZE 90M

SPARK GAP

SG1 1-519-422-11 GAP, SPARK  
SG2 1-519-422-11 GAP, SPARK  
SG3 1-519-422-11 GAP, SPARK  
SG4 1-519-422-11 GAP, SPARK  
SG5 1-519-422-11 GAP, SPARK  
  
SG6 1-519-422-11 GAP, SPARK

\*\*\*\*\*  
\*1-627-677-11 V BOARD  
\*\*\*\*\*

1-563-265-11 CONNECTOR, MULTIPLE 10P

Remark

Ref.No. Part No. Description

Remark

RESISTOR

R1 1-249-405-11 CARBON 100 5% 1/4W  
R2 1-249-405-11 CARBON 100 5% 1/4W  
R3 1-249-405-11 CARBON 100 5% 1/4W  
R4 1-249-405-11 CARBON 100 5% 1/4W  
R5 1-249-405-11 CARBON 100 5% 1/4W  
  
R6 1-249-405-11 CARBON 100 5% 1/4W  
R7 1-249-405-11 CARBON 100 5% 1/4W

\*\*\*\*\*

\*A-1345-800-A EB BOARD, COMPLETE  
\*\*\*\*\*

\*4-381-904-01 SPRING (C)  
\*4-381-907-01 INSULATOR (A)

CAPACITOR

C1 1-123-333-00 ELECT 100MF 20% 25V  
C2 1-123-938-00 ELECT 4.7MF 20% 200V  
C3 1-123-333-00 ELECT 100MF 20% 25V  
C4 1-102-978-00 CERAMIC 220PF 10% 50V  
C7 1-123-938-00 ELECT 4.7MF 20% 200V  
  
C8 1-136-157-00 FILM 0.022MF 5% 50V

DIODE

D1 8-719-911-55 DIODE U05G  
D2 8-719-911-55 DIODE U05G  
D3 8-719-911-19 DIODE 1SS119  
D4 8-719-911-19 DIODE 1SS119  
D5 8-719-911-19 DIODE 1SS119  
  
D6 8-719-911-19 DIODE 1SS119

CONNECTOR

EB1 \*1-566-058-11 PIN, CONNECTOR 6P  
EB2 \*1-566-058-11 PIN, CONNECTOR 6P  
EB3 \*1-566-055-11 PIN, CONNECTOR 3P  
EB4 \*1-508-765-00 3P PLUG (M)  
EB5 \*1-566-054-11 PIN, CONNECTOR 2P

TRANSISTOR

Q1 8-729-697-92 TRANSISTOR 2SA979  
Q2 8-729-177-42 TRANSISTOR 2SD774-3  
Q3 8-729-309-36 TRANSISTOR 2SA893A  
Q4 8-729-309-08 TRANSISTOR 2SC1890A  
Q5 8-729-300-80 TRANSISTOR 2SB860  
  
Q6 8-729-300-70 TRANSISTOR 2SD1137  
Q7 8-729-386-12 TRANSISTOR 2SB861  
Q8 8-729-255-12 TRANSISTOR 2SC2551  
Q9 8-729-178-54 TRANSISTOR 2SC2785  
Q10 8-729-117-54 TRANSISTOR 2SA1175

RESISTOR

R1 1-249-429-11 CARBON 10K 5% 1/4W  
R2 1-249-430-11 CARBON 12K 5% 1/4W  
R3 1-249-426-11 CARBON 5.6K 5% 1/4W  
R4 1-216-465-11 METAL OXIDE 27K 5% 2W F  
R5 1-247-802-11 CARBON 62 5% 1/4W  
  
R6 1-249-414-11 CARBON 560 5% 1/4W  
R7 1-249-448-11 CARBON 1.2 5% 1/4W F  
R8 1-249-448-11 CARBON 1.2 5% 1/4W F  
R9 1-215-866-11 METAL OXIDE 330 5% 1W F  
R10 1-216-356-00 METAL OXIDE 3.9 5% 1W F

EB

D

Ref.No.	Part No.	Description				Remark	Ref.No.	Part No.	Description				Remark
R11	1-249-429-11	CARBON	10K	5%	1/4W		C302	1-161-379-00	CERAMIC	0.01MF	30%	16V	
R12	1-249-425-11	CARBON	4.7K	5%	1/4W		C303	1-126-157-11	ELECT	10MF	20%	16V	
R13	1-247-719-11	CARBON	3.3K	5%	1/4W	F	C304	1-161-379-00	CERAMIC	0.01MF	30%	16V	
R14	1-247-700-11	CARBON	100	5%	1/4W	F	C305	1-161-379-00	CERAMIC	0.01MF	30%	16V	
R15	1-215-873-00	METAL OXIDE	4.7K	5%	1W	F	C400	1-123-332-00	ELECT	47MF	20%	25V	
R16	1-249-429-11	CARBON	10K	5%	1/4W		C401	1-123-332-00	ELECT	47MF	20%	16V	
R17	1-249-429-11	CARBON	10K	5%	1/4W		C402	1-161-379-00	CERAMIC	0.01MF	30%	16V	
R18	1-249-405-11	CARBON	100	5%	1/4W		C403	1-126-157-11	ELECT	10MF	20%	16V	
R19	1-247-688-11	CARBON	10	5%	1/4W	F	C405	1-161-379-00	CERAMIC	0.01MF	30%	16V	
R20	1-247-688-11	CARBON	10	5%	1/4W	F	C406	1-126-157-11	ELECT	10MF	20%	16V	
*****													
*A-1345-801-A D BOARD, COMPLETE													
*****													
CAPACITOR													
C1	1-136-153-00	FILM	0.01MF	5%	50V		DIODE						
C2	1-136-165-00	FILM	0.1MF	5%	50V		D1	8-719-911-19	DIODE 1SS119				
C3	1-126-094-11	ELECT	4.7MF	20%	16V		D2	8-719-911-19	DIODE 1SS119				
C4	1-124-255-00	ELECT	1MF	20%	50V		D3	8-719-109-99	DIODE RD7.5ES-B				
C5	1-124-255-00	ELECT	1MF	20%	50V		D4	8-719-109-83	DIODE RD5.1ES-B				
C6	1-124-255-00	ELECT	1MF	20%	50V		D8	8-719-911-19	DIODE 1SS119				
C7	1-124-255-00	ELECT	1MF	20%	50V		CONNECTOR						
C8	1-161-379-00	CERAMIC	0.01MF	30%	16V		D1	*1-566-060-11	PIN, CONNECTOR 8P				
C9	1-161-379-00	CERAMIC	0.01MF	30%	16V		D2	*1-566-057-11	PIN, CONNECTOR 5P				
C10	1-161-379-00	CERAMIC	0.01MF	30%	16V		D3	*1-566-058-11	PIN, CONNECTOR 6P				
C11	1-102-973-00	CERAMIC	100PF	5%	50V		D4	*1-566-058-11	PIN, CONNECTOR 6P				
C12	1-136-153-00	FILM	0.01MF	5%	50V		D5	*1-566-055-11	PIN, CONNECTOR 3P				
C13	1-136-153-00	FILM	0.01MF	5%	50V		D6	*1-566-055-11	PIN, CONNECTOR 3P				
C14	1-161-379-00	CERAMIC	0.01MF	30%	16V		IC						
C15	1-161-379-00	CERAMIC	0.01MF	30%	16V		IC1	8-759-909-70	IC CX23025				
C16	1-124-255-00	ELECT	1MF	20%	50V		IC2	8-752-033-68	IC CXA1268P				
C17	1-102-820-00	CERAMIC	330PF	5%	50V		IC3	8-759-208-10	IC TC4053BPHB				
C18	1-136-153-00	FILM	0.01MF	5%	50V		IC4	8-759-145-58	IC UPC4558C				
C19	1-124-255-00	ELECT	1MF	20%	50V		IC5	8-759-700-08	IC NJM4558S				
C20	1-161-379-00	CERAMIC	0.01MF	30%	16V		IC6	8-759-208-14	IC TC4066BPHB				
C21	1-161-379-00	CERAMIC	0.01MF	30%	16V		IC7	8-759-145-58	IC UPC4558C				
C22	1-161-379-00	CERAMIC	0.01MF	30%	16V		IC8	8-759-208-10	IC TC4053BPHB				
C23	1-161-379-00	CERAMIC	0.01MF	30%	16V		IC9	8-759-145-58	IC UPC4558C				
C24	1-136-153-00	FILM	0.01MF	5%	50V		IC10	8-759-990-82	IC TL082CP				
C25	1-136-165-00	FILM	0.1MF	5%	50V		IC11	8-759-145-58	IC UPC4558C				
C26	1-126-157-11	ELECT	10MF	20%	16V		IC12	8-759-145-58	IC UPC4558C				
C27	1-130-479-00	MYLAR	0.0047MF	5%	50V		IC13	8-759-990-82	IC TL082CP				
C28	1-124-234-00	ELECT	22MF	20%	16V		IC14	8-759-729-03	IC NJM2903D				
C29	1-130-475-00	MYLAR	0.0022MF	5%	50V		IC15	8-759-729-03	IC NJM2903D				
C30	1-130-477-00	FILM	0.0033MF	5%	50V		IC16	8-759-145-58	IC UPC4558C				
C31	1-102-963-00	CERAMIC	33PF	5%	50V		IC17	8-759-729-03	IC NJM2903D				
C32	1-161-379-00	CERAMIC	0.01MF	30%	16V		IC18	8-759-240-69	IC TC4069UBP				
C33	1-124-234-00	ELECT	22MF	20%	16V		IC19	8-759-100-60	IC UPC1377C				
C34	1-102-978-00	CERAMIC	220PF	5%	50V		IC20	8-759-170-12	IC UPC78M12H				
C36	1-161-379-00	CERAMIC	0.01MF	30%	16V		IC21	8-759-105-40	IC UPC79M12H				
C37	1-161-379-00	CERAMIC	0.01MF	30%	16V		IC22	8-759-170-05	IC UPC78M05H				
C100	1-123-333-00	ELECT	100MF	20%	25V		IC23	8-759-105-38	IC UPC79M05H				
C101	1-123-332-00	ELECT	47MF	20%	16V		IC24	8-759-208-10	IC TC4053BPHB				
C102	1-126-157-11	ELECT	10MF	20%	16V		IC25	8-759-990-82	IC TL082CP				
C103	1-126-157-11	ELECT	10MF	20%	16V		COIL						
C104	1-161-379-00	CERAMIC	0.01MF	30%	16V		L1	1-410-068-11	INDUCTOR	5.6MMH			
C105	1-126-157-11	ELECT	10MF	20%	16V		TRANSISTOR						
C106	1-126-157-11	ELECT	10MF	20%	16V		Q1	8-729-900-89	TRANSISTOR DTC144ES				
C200	1-123-333-00	ELECT	100MF	20%	25V		Q6	8-729-178-54	TRANSISTOR 2SC2785				
C201	1-123-332-00	ELECT	47MF	20%	16V		Q7	8-729-178-54	TRANSISTOR 2SC2785				
C202	1-126-157-11	ELECT	10MF	20%	16V		Q8	8-729-900-65	TRANSISTOR DTA144ES				
C203	1-126-157-11	ELECT	10MF	20%	16V								
C204	1-161-379-00	CERAMIC	0.01MF	30%	16V								
C300	1-123-332-00	ELECT	47MF	20%	25V								
C301	1-123-332-00	ELECT	47MF	20%	16V								

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
Q9	8-729-178-54	TRANSISTOR 2SC2785		R71	1-249-429-11	CARBON 10K 5% 1/4W	
Q10	8-729-900-89	TRANSISTOR DTC144ES		R72	1-249-429-11	CARBON 10K 5% 1/4W	
<u>RESISTOR</u>				R73	1-249-429-11	CARBON 10K 5% 1/4W	
R1	1-249-441-11	CARBON 100K 5% 1/4W		R74	1-249-429-11	CARBON 10K 5% 1/4W	
R2	1-249-423-11	CARBON 3.3K 5% 1/4W		R75	1-249-439-11	CARBON 68K 5% 1/4W	
R3	1-249-423-11	CARBON 3.3K 5% 1/4W		R76	1-249-430-11	CARBON 12K 5% 1/4W	
R4	1-249-425-11	CARBON 4.7K 5% 1/4W		R77	1-249-429-11	CARBON 10K 5% 1/4W	
R5	1-249-429-11	CARBON 10K 5% 1/4W		R78	1-249-439-11	CARBON 68K 5% 1/4W	
R6	1-249-429-11	CARBON 10K 5% 1/4W		R79	1-249-429-11	CARBON 10K 5% 1/4W	
R7	1-249-423-11	CARBON 3.3K 5% 1/4W		R80	1-249-430-11	CARBON 12K 5% 1/4W	
R8	1-249-431-11	CARBON 15K 5% 1/4W		R81	1-249-423-11	CARBON 3.3K 5% 1/4W	
R9	1-249-431-11	CARBON 15K 5% 1/4W		R82	1-249-417-11	CARBON 1K 5% 1/4W	
R10	1-249-431-11	CARBON 15K 5% 1/4W		R83	1-249-429-11	CARBON 10K 5% 1/4W	
R11	1-249-431-11	CARBON 15K 5% 1/4W		R84	1-249-426-11	CARBON 5.6K 5% 1/4W	
R12	1-249-441-11	CARBON 100K 5% 1/4W		R85	1-249-428-11	CARBON 8.2K 5% 1/4W	
R13	1-249-405-11	CARBON 100K 5% 1/4W		R86	1-249-423-11	CARBON 3.3K 5% 1/4W	
R14	1-249-429-11	CARBON 10K 5% 1/4W		R87	1-249-417-11	CARBON 1K 5% 1/4W	
R15	1-249-425-11	CARBON 4.7K 5% 1/4W		R88	1-249-426-11	CARBON 5.6K 5% 1/4W	
R16	1-249-429-11	CARBON 10K 5% 1/4W		R89	1-249-439-11	CARBON 68K 5% 1/4W	
R17	1-249-429-11	CARBON 10K 5% 1/4W		R90	1-249-429-11	CARBON 10K 5% 1/4W	
R18	1-249-441-11	CARBON 100K 5% 1/4W		R91	1-249-430-11	CARBON 12K 5% 1/4W	
R19	1-249-429-11	CARBON 10K 5% 1/4W		R92	1-249-419-11	CARBON 1.5K 5% 1/4W	
R20	1-249-429-11	CARBON 10K 5% 1/4W		R93	1-249-429-11	CARBON 10K 5% 1/4W	
R21	1-247-891-00	CARBON 330K 5% 1/4W		R94	1-249-429-11	CARBON 10K 5% 1/4W	
R22	1-247-903-00	CARBON 1M 5% 1/4W		R95	1-249-429-11	CARBON 10K 5% 1/4W	
R23	1-249-439-11	CARBON 68K 5% 1/4W		R96	1-249-425-11	CARBON 4.7K 5% 1/4W	
R25	1-247-891-00	CARBON 330K 5% 1/4W		R97	1-249-417-11	CARBON 1K 5% 1/4W	
R26	1-249-439-11	CARBON 68K 5% 1/4W		R98	1-249-425-11	CARBON 4.7K 5% 1/4W	
R31	1-249-429-11	CARBON 10K 5% 1/4W		R99	1-249-429-11	CARBON 10K 5% 1/4W	
R32	1-249-429-11	CARBON 10K 5% 1/4W		R100	1-249-417-11	CARBON 1K 5% 1/4W	
R33	1-249-429-11	CARBON 10K 5% 1/4W		R101	1-249-439-11	CARBON 68K 5% 1/4W	
R35	1-249-429-11	CARBON 10K 5% 1/4W		R102	1-249-415-11	CARBON 680 5% 1/4W	
R36	1-249-441-11	CARBON 100K 5% 1/4W		R103	1-249-423-11	CARBON 3.3K 5% 1/4W	
R37	1-249-433-11	CARBON 22K 5% 1/4W		R104	1-249-425-11	CARBON 4.7K 5% 1/4W	
R38	1-249-431-11	CARBON 15K 5% 1/4W		R105	1-249-430-11	CARBON 12K 5% 1/4W	
R39	1-249-435-11	CARBON 33K 5% 1/4W		R106	1-249-417-11	CARBON 1K 5% 1/4W	
R40	1-249-433-11	CARBON 22K 5% 1/4W		R107	1-249-429-11	CARBON 10K 5% 1/4W	
R41	1-249-418-11	CARBON 1.2K 5% 1/4W		R108	1-249-429-11	CARBON 10K 5% 1/4W	
R42	1-249-441-11	CARBON 100K 5% 1/4W		R109	1-249-417-11	CARBON 1K 5% 1/4W	
R43	1-249-429-11	CARBON 10K 5% 1/4W		R110	1-249-417-11	CARBON 1K 5% 1/4W	
R44	1-249-441-11	CARBON 100K 5% 1/4W		R111	1-249-417-11	CARBON 1K 5% 1/4W	
R45	1-249-441-11	CARBON 100K 5% 1/4W		R112	1-249-417-11	CARBON 1K 5% 1/4W	
R46	1-247-887-00	CARBON 220K 5% 1/4W		R113	1-249-435-11	CARBON 33K 5% 1/4W	
R47	1-249-439-11	CARBON 68K 5% 1/4W		R114	1-249-441-11	CARBON 100K 5% 1/4W	
R48	1-249-439-11	CARBON 68K 5% 1/4W		R115	1-249-433-11	CARBON 22K 5% 1/4W	
R49	1-249-426-11	CARBON 5.6K 5% 1/4W		R116	1-249-433-11	CARBON 22K 5% 1/4W	
R50	1-249-429-11	CARBON 10K 5% 1/4W		R117	1-249-425-11	CARBON 4.7K 5% 1/4W	
R51	1-249-429-11	CARBON 10K 5% 1/4W		R118	1-249-434-11	CARBON 27K 5% 1/4W	
R52	1-249-429-11	CARBON 10K 5% 1/4W		R119	1-249-435-11	CARBON 33K 5% 1/4W	
R53	1-249-429-11	CARBON 10K 5% 1/4W		R120	1-249-429-11	CARBON 10K 5% 1/4W	
R54	1-249-429-11	CARBON 10K 5% 1/4W		R121	1-249-429-11	CARBON 10K 5% 1/4W	
R55	1-249-433-11	CARBON 22K 5% 1/4W		R122	1-249-417-11	CARBON 1K 5% 1/4W	
R56	1-249-434-11	CARBON 27K 5% 1/4W		R130	1-215-862-11	METAL OXIDE 68 5% 1W F	
R57	1-249-429-11	CARBON 10K 5% 1/4W		R131	1-215-862-11	METAL OXIDE 68 5% 1W F	
R59	1-249-439-11	CARBON 68K 5% 1/4W		R132	1-247-713-11	CARBON 1K 5% 1/4W	
R60	1-247-895-00	CARBON 470K 5% 1/4W		R133	1-247-713-11	CARBON 1K 5% 1/4W	
R61	1-249-429-11	CARBON 10K 5% 1/4W		R134	1-247-713-11	CARBON 1K 5% 1/4W	
R62	1-247-895-00	CARBON 470K 5% 1/4W		R135	1-247-713-11	CARBON 1K 5% 1/4W	
R63	1-249-429-11	CARBON 10K 5% 1/4W		R136	1-247-713-11	CARBON 1K 5% 1/4W	
R64	1-249-441-11	CARBON 100K 5% 1/4W		<u>VARIABLE RESISTOR</u>			
R65	1-249-429-11	CARBON 10K 5% 1/4W		RV1	1-237-518-21	RES, ADJ, CERMET 10K	
R66	1-249-429-11	CARBON 10K 5% 1/4W		RV2	1-237-518-21	RES, ADJ, CERMET 10K	
R70	1-249-429-11	CARBON 10K 5% 1/4W		RV3	1-237-518-21	RES, ADJ, CERMET 10K	

7-26

The components identified by shading and mark **Δ** are critical for safety. Replace only with part number specified.

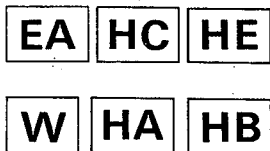
Les composants identifiés par une trame et une marque **Δ** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

**EA**

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
D17	8-719-110-31	DIODE RD12ES-B2		Q15	8-729-200-17	TRANSISTOR 2SA1091	
D19	8-719-911-19	DIODE 1SS119		Q16	8-729-225-34	TRANSISTOR 2SC2534	
D20	8-719-911-19	DIODE 1SS119		Q17	8-729-168-82	TRANSISTOR 2SC2688	
D24	<b>Δ</b> 8-759-157-40	IC UPC574J		Q19	8-729-117-54	TRANSISTOR 2SA1175	
D25	8-719-911-19	DIODE 1SS119		Q20	8-729-178-54	TRANSISTOR 2SC2785	
D26	8-719-911-19	DIODE 1SS119		RESISTOR			
D27	8-719-000-28	THYRISTOR CRO2AM-8		JW4	1-247-713-11	CARBON 1K 5% 1/4W	
D28	8-719-911-19	DIODE 1SS119		R1	1-247-721-11	CARBON 4.7K 5% 1/4W	
D29	<b>Δ</b> 8-759-157-40	IC UPC574J		R2	1-249-422-11	CARBON 2.7K 5% 1/4W	
D30	8-719-911-19	DIODE 1SS119		R3	1-249-469-11	CARBON 100K 5% 1/4W	
D31	8-719-300-76	DIODE RH-1A		R4	1-249-435-11	CARBON 33K 5% 1/4W	
D32	8-719-300-76	DIODE RH-1A		R5	1-249-429-11	CARBON 10K 5% 1/4W	
D33	8-719-300-76	DIODE RH-1A		R6	1-249-429-11	CARBON 10K 5% 1/4W	
CONNECTOR				R7	1-249-429-11	CARBON 10K 5% 1/4W	
EA1	*1-566-058-11	PIN, CONNECTOR 6P		R8	1-249-421-11	CARBON 2.2K 5% 1/4W	
EA2	*1-566-055-11	PIN, CONNECTOR 3P		R9	1-249-431-11	CARBON 15K 5% 1/4W	
EA3	*1-566-057-11	PIN, CONNECTOR 5P		R10	1-249-441-11	CARBON 100K 5% 1/4W	
EA4	*1-566-059-11	PIN, CONNECTOR 7P		R11	1-249-417-11	CARBON 1K 5% 1/4W	
EA5	*1-566-056-11	PIN, CONNECTOR 4P		R12	1-249-421-11	CARBON 2.2K 5% 1/4W	
EA6	*1-566-055-11	PIN, CONNECTOR 3P		R13	1-249-448-11	CARBON 1.2 5% 1/4W	F
EA7	*1-566-057-11	PIN, CONNECTOR 5P		R14	1-249-448-11	CARBON 1.2 5% 1/4W	F
EA8	*1-566-055-11	PIN, CONNECTOR 3P		R15	1-215-880-00	METAL OXIDE 10 5% 2W	F
EA9	*1-566-058-11	PIN, CONNECTOR 6P		R16	1-249-429-11	CARBON 10K 5% 1/4W	
EA10	*1-508-766-00	4P PLUG (M)		R17	1-249-429-11	CARBON 10K 5% 1/4W	
EA11	*1-508-767-00	5P PLUG		R18	1-215-898-11	METAL OXIDE 10K 5% 2W	F
EA12	*1-508-786-00	2P PLUG (M)		R19	1-216-357-00	METAL OXIDE 4.7 5% 1W	F
EA13	*1-564-038-00	CONNECTOR PLUG, DY (MINI) 6P		R20	1-249-417-11	CARBON 1K 5% 1/4W	
EA14	*1-508-765-00	3P PLUG (M)		R21	1-249-422-11	CARBON 2.7K 5% 1/4W	
IC				R22	1-249-422-11	CARBON 2.7K 5% 1/4W	
IC1	8-759-100-75	IC UPC1394C		R23	1-249-425-11	CARBON 4.7K 5% 1/4W	
IC2	8-759-100-75	IC UPC1394C		R24	1-249-435-11	CARBON 33K 5% 1/4W	
IC3	8-759-990-82	IC TLO82CP		R25	1-249-437-11	CARBON 47K 5% 1/4W	
IC4	8-759-729-03	IC NJM2903D		R26	1-249-429-11	CARBON 10K 5% 1/4W	
IC5	8-759-145-58	IC UPC4558C		R27	1-249-429-11	CARBON 10K 5% 1/4W	
COIL				R28	1-249-435-11	CARBON 33K 5% 1/4W	
L1	1-459-433-00	COIL (WITH CORE)		R29	1-249-427-11	CARBON 6.8K 5% 1/4W	
L2	1-459-433-00	COIL (WITH CORE)		R30	1-249-429-11	CARBON 10K 5% 1/4W	
L3	1-459-433-00	COIL (WITH CORE)		R31	1-215-432-00	METAL 3K 1% 1/6W	
L4	1-459-111-00	COIL, DRAM CORE (CDI)		R32	1-215-433-00	METAL 3.3K 1% 1/6W	
L5	1-459-111-00	COIL, DRAM CORE (CDI)		R33	1-249-417-11	CARBON 1K 5% 1/4W	
L6	1-459-087-00	COIL, HCC DUST CORE 3.9MMH		R34	1-249-429-11	CARBON 10K 5% 1/4W	
L7	1-459-215-00	COIL (WITH CORE)		R35	1-249-429-11	CARBON 10K 5% 1/4W	
L8	1-459-207-00	COIL, CORE		R37	1-249-429-11	CARBON 10K 5% 1/4W	
TRANSISTOR				R38	1-249-429-11	CARBON 10K 5% 1/4W	
Q1	8-729-117-54	TRANSISTOR 2SA1175		R39	1-215-898-11	METAL OXIDE 10K 5% 2W	F
Q2	8-729-697-92	TRANSISTOR 2SA979		R40	1-215-859-00	METAL OXIDE 22 5% 1W	F
Q3	8-729-177-42	TRANSISTOR 2SD774-3		R41	1-216-349-00	METAL OXIDE 1 5% 1W	F
Q4	8-729-217-33	TRANSISTOR 2SC1173		R42	1-212-956-00	FUSIBLE 8.2 5% 1/2W	F
Q5	8-729-247-33	TRANSISTOR 2SA473		R43	1-249-417-11	CARBON 1K 5% 1/4W	
Q6	8-729-168-82	TRANSISTOR 2SC2688		R44	1-215-475-00	METAL 180K 1% 1/6W	
Q7	8-729-175-22	TRANSISTOR 2SC2752		R47	1-215-445-00	METAL 10K 1% 1/6W	
Q8	8-729-255-12	TRANSISTOR 2SC2551		R48	1-247-725-11	CARBON 10K 5% 1/4W	
Q9	8-729-117-54	TRANSISTOR 2SA1175		R49	1-249-448-11	CARBON 1.2 5% 1/4W	F
Q10	8-729-168-82	TRANSISTOR 2SC2688		R50	1-249-429-11	CARBON 10K 5% 1/4W	
Q12	8-729-313-42	TRANSISTOR 2SD1134		R51	1-249-425-11	CARBON 4.7K 5% 1/4W	
Q13	8-729-385-82	TRANSISTOR 2SB858		R52	1-247-700-11	CARBON 100 5% 1/4W	
Q14	8-729-168-82	TRANSISTOR 2SC2688		R53	1-215-886-11	METAL OXIDE 100 5% 2W	F
				R54	1-212-998-00	FUSIBLE 470 5% 1/2W	F
				R60	1-249-417-11	CARBON 1K 5% 1/4W	
				R61	1-249-433-11	CARBON 22K 5% 1/4W	
				R62	1-249-433-11	CARBON 22K 5% 1/4W	
				R63	1-249-441-11	CARBON 100K 5% 1/4W	

7. ELECTRICAL PARTS LIST





- The components identified by in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

Les composants identifies par une trame et une marque sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

The components identified by shading and mark are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description	Remark
R64	1-247-895-00	CARBON 470K 5% 1/4W	
R65	1-249-437-11	CARBON 47K 5% 1/4W	
R66	1-249-429-11	CARBON 10K 5% 1/4W	
R67	1-249-429-11	CARBON 10K 5% 1/4W	
R68	1-249-434-11	CARBON 27K 5% 1/4W	
R69	1-249-427-11	CARBON 6.8K 5% 1/4W	
R70	1-249-417-11	CARBON 1K 5% 1/4W	
R71	1-215-436-00	METAL 4.3K 1% 1/6W	
R72	1-215-450-00	METAL 16K 1% 1/6W	
R73	1-215-439-00	METAL 5.6K 1% 1/6W	
R75	1-249-423-11	CARBON 3.3K 5% 1/4W	
R76	1-247-887-00	CARBON 220K 5% 1/4W	
R77	1-249-437-11	CARBON 47K 5% 1/4W	
R78	1-249-429-11	CARBON 10K 5% 1/4W	
R79	1-249-429-11	CARBON 10K 5% 1/4W	
R80	1-249-429-11	CARBON 10K 5% 1/4W	
R81	1-215-898-11	METAL OXIDE 10K 5% 2W F	
R82	1-215-857-11	METAL OXIDE 10 5% 1W F	
R83	1-216-348-00	METAL OXIDE 0.82 5% 1W F	
R84	1-249-417-11	CARBON 1K 5% 1/4W	
R85	1-249-417-11	CARBON 1K 5% 1/4W	
R86	1-215-923-00	METAL OXIDE 10K 5% 3W F	
R87	1-216-353-00	METAL OXIDE 2.2 5% 1W F	
R88	1-249-441-11	CARBON 100K 5% 1/4W	
R89	1-249-431-11	CARBON 15K 5% 1/4W	
R90	1-249-417-11	CARBON 1K 5% 1/4W	
R91	1-249-425-11	CARBON 4.7K 5% 1/4W	
R92	1-249-441-11	CARBON 100K 5% 1/4W	
R93	1-249-422-11	CARBON 2.7K 5% 1/4W	
R94	1-249-435-11	CARBON 33K 5% 1/4W	
R95	1-249-429-11	CARBON 10K 5% 1/4W	
R96	1-249-421-11	CARBON 2.2K 5% 1/4W	
R97	1-249-393-11	CARBON 10 5% 1/4W	
R98	1-249-429-11	CARBON 10K 5% 1/4W	
R99	1-249-441-11	CARBON 100K 5% 1/4W	
R100	1-249-429-11	CARBON 10K 5% 1/4W	
R101	1-249-429-11	CARBON 10K 5% 1/4W	
R102	1-215-898-11	METAL OXIDE 10K 5% 2W F	
R103	1-215-898-11	METAL OXIDE 10K 5% 2W F	
R104	1-249-423-11	CARBON 3.3K 5% 1/4W	
R105	1-215-455-00	METAL 27K 1% 1/6W	
R106	1-215-456-00	METAL 30K 1% 1/6W	
R107	1-215-459-00	METAL 39K 1% 1/6W	
R108	1-215-469-00	METAL 100K 1% 1/6W	
R109	1-215-469-00	METAL 100K 1% 1/6W	
R110	1-249-441-11	CARBON 100K 5% 1/4W	
R111	1-249-423-11	CARBON 3.3K 5% 1/4W	
R113	1-215-455-00	METAL 27K 1% 1/6W	
R114	1-215-437-00	METAL 4.7K 1% 1/6W	
R115	1-215-486-00	METAL 510K 1% 1/6W	
R116	1-215-453-00	METAL 22K 1% 1/6W	
R117	1-215-469-00	METAL 100K 1% 1/6W	
R119	1-215-437-00	METAL 4.7K 1% 1/6W	
R120	1-215-437-00	METAL 4.7K 1% 1/6W	
R121	1-215-429-00	METAL 2.2K 1% 1/6W	
R122	1-215-437-00	METAL 4.7K 1% 1/6W	
R123	1-215-437-00	METAL 4.7K 1% 1/6W	
R124	1-215-429-00	METAL 2.2K 1% 1/6W	
R125	1-216-357-00	METAL OXIDE 4.7 5% 1W F	
R127	1-202-719-00	SOLID 1M 10% 1/2W	

#### VARIABLE RESISTOR

RV1 1-237-513-21 RES, ADJ, CERMET 200

Ref.No.	Part No.	Description	Remark
TRANSFORMER			
T1	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE	
T2	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE	
T3	1-439-383-11	HOT	
T4	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE	
T5	1-439-384-11	LOT	
T6	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE	
*****			
*1-617-887-11 HC BOARD			
*****			
SWITCH			
SW1	1-570-567-21	SWITCH, PUSH (2 KEY)	
SW2	1-570-567-21	SWITCH, PUSH (2 KEY)	
SW3	1-570-567-11	SWITCH, PUSH (2 KEY)	
SW4	1-570-567-11	SWITCH, PUSH (2 KEY)	
*****			
*1-618-814-11 HE BOARD			
*****			
*****			
*1-627-678-11 W BOARD			
*****			
CAPACITOR			
C1	1-106-367-00	MYLAR 0.01MF 10% 200V	
C2	1-106-367-00	MYLAR 0.01MF 10% 200V	
RESISTOR			
R1	1-214-702-00	METAL 75 1% 1/4W	
R2	1-214-702-00	METAL 75 1% 1/4W	
R3	1-214-702-00	METAL 75 1% 1/4W	
*****			
*1-627-675-11 HA BOARD			
*****			
CONNECTOR			
HA1	*1-566-042-11	PIN, CONNECTOR 3P	
HA2	*1-566-044-11	PIN, CONNECTOR 5P	
HA3	*1-566-051-11	PIN, CONNECTOR 12P	
HA4	*1-566-041-11	PIN, CONNECTOR 2P	
RESISTOR			
R201	1-249-406-11	CARBON 120 5% 1/4W	
SWITCH			
S201	1-570-565-11	SWITCH, PUSH (10 KEY)	
*****			
*1-627-680-11 HB BOARD			
*****			
1-570-568-11 SWITCH, PUSH (4 KEY)			
1-570-569-11 SWITCH, PUSH (3 KEY)			

# HB HG HH Y X Z

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
<u>CAPACITOR</u>				<u>SWITCH</u>			
C1	1-123-820-00	ELECT 33MF	20% 16V	S10	1-570-509-11	SWITCH, TOGGLE	
C2	1-123-820-00	ELECT 33MF	20% 16V	S11	1-570-510-11	SWITCH, TOGGLE	
C3	1-101-004-00	CERAMIC 0.01MF	50V	S12	1-570-509-11	SWITCH, TOGGLE	
C4	1-101-004-00	CERAMIC 0.01MF	50V	S13	1-570-509-11	SWITCH, TOGGLE	
C5	1-101-004-00	CERAMIC 0.01MF	50V	S14	1-570-512-11	SWITCH, TOGGLE	
C6	1-101-004-00	CERAMIC 0.01MF	50V	S15	1-570-509-11	SWITCH, TOGGLE	
C7	1-101-004-00	CERAMIC 0.01MF	50V	*****			
<u>DIODE</u>				*1-627-681-11	HG BOARD	*****	
D1	8-719-812-42	DIODE TLY124		<u>RESISTOR</u>			
D2	8-719-812-42	DIODE TLY124		R1	1-215-465-00	METAL 68K 1% 1/6W	
D3	8-719-812-42	DIODE TLY124		R2	1-215-451-00	METAL 18K 1% 1/6W	
D4	8-719-812-42	DIODE TLY124		R3	1-215-469-00	METAL 100K 1% 1/6W	
D5	8-719-812-43	DIODE TLG124A		R4	1-215-469-00	METAL 100K 1% 1/6W	
D6	8-719-812-43	DIODE TLG124A		R5	1-249-425-11	CARBON 4.7K 5% 1/4W	
D7	8-719-812-43	DIODE TLG124A		<u>SWITCH</u>			
<u>CONNECTOR</u>				SW1	1-570-566-11	SWITCH, PUSH (4 KEY)	
HB1	*1-566-064-11	PIN, CONNECTOR 12P		SW2	1-570-566-11	SWITCH, PUSH (4 KEY)	
HB2	*1-566-062-11	PIN, CONNECTOR 10P		SW3	1-570-566-11	SWITCH, PUSH (4 KEY)	
HB3	*1-566-050-11	PIN, CONNECTOR 8P		SW4	1-570-566-11	SWITCH, PUSH (4 KEY)	
HB4	*1-566-064-11	PIN, CONNECTOR 12P		*****			
HB5	*1-566-058-11	PIN, CONNECTOR 6P		*1-627-682-11	HH BOARD	*****	
HB6	*1-566-064-11	PIN, CONNECTOR 12P		<u>CONNECTOR</u>			
<u>RESISTOR</u>				HH1	*1-566-614-11	PLUG (L TYPE) 3P	
R1	1-215-469-00	METAL 100K 1% 1/6W		HH2	*1-566-614-11	PLUG (L TYPE) 3P	
R2	1-215-469-00	METAL 100K 1% 1/6W		HH3	*1-566-614-11	PLUG (L TYPE) 3P	
R3	1-215-469-00	METAL 100K 1% 1/6W		HH4	*1-566-614-11	PLUG (L TYPE) 3P	
R4	1-215-469-00	METAL 100K 1% 1/6W		<u>VARIABLE RESISTOR</u>			
R5	1-215-469-00	METAL 100K 1% 1/6W		RV1	1-238-332-11	RES, VAR, CARBON 20K	
R6	1-215-469-00	METAL 100K 1% 1/6W		RV2	1-238-332-11	RES, VAR, CARBON 20K	
R7	1-215-469-00	METAL 100K 1% 1/6W		RV3	1-238-332-11	RES, VAR, CARBON 20K	
R8	1-215-469-00	METAL 100K 1% 1/6W		RV4	1-238-332-11	RES, VAR, CARBON 20K	
R9	1-215-469-00	METAL 100K 1% 1/6W		*****			
R10	1-215-469-00	METAL 100K 1% 1/6W		*1-627-671-11	Y BOARD	*****	
R11	1-215-469-00	METAL 100K 1% 1/6W		<u>DIODE</u>			
R12	1-249-425-11	CARBON 4.7K 5% 1/4W		D1	8-719-812-43	DIODE TLG124A	
R13	1-249-423-11	CARBON 3.3K 5% 1/4W		*****			
R15	1-249-423-11	CARBON 3.3K 5% 1/4W		*1-627-676-11	X BOARD	*****	
R16	1-249-423-11	CARBON 3.3K 5% 1/4W		<u>DIODE</u>			
R17	1-249-423-11	CARBON 3.3K 5% 1/4W		D301	8-719-920-21	DIODE LT-9220H	
<u>VARIABLE RESISTOR</u>				*****			
RV1	1-237-519-21	RES, ADJ, CERMET 20K		*1-627-687-11	Z BOARD	*****	
RV2	1-237-519-21	RES, ADJ, CERMET 20K		<u>CONNECTOR, MULTI</u>			
RV3	1-237-519-21	RES, ADJ, CERMET 20K		*1-561-337-21	CONNECTOR, MULTI		
RV4	1-237-519-21	RES, ADJ, CERMET 20K					
RV5	1-237-520-21	RES, ADJ, CERMET 50K					
RV6	1-237-520-21	RES, ADJ, CERMET 50K					
RV7	1-237-520-21	RES, ADJ, CERMET 50K					
RV8	1-237-520-21	RES, ADJ, CERMET 50K					
RV9	1-237-520-21	RES, ADJ, CERMET 50K					
RV10	1-237-520-21	RES, ADJ, CERMET 50K					
RV11	1-237-520-21	RES, ADJ, CERMET 50K					
RV12	1-237-521-21	RES, ADJ, CERMET 100K					
<u>SWITCH</u>							
S8	1-570-509-11	SWITCH, TOGGLE					
S9	1-570-509-11	SWITCH, TOGGLE					

BD

BM

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
*A-1135-391-A	BD BOARD, COMPLETE (BVM-1415P ONLY)	*****		C27	1-102-515-00	CERAMIC 24PF	5% 50V
*A-1135-424-A	BM BOARD, COMPLETE (BVM-1415PM ONLY)	*****		C28	1-109-685-00	MICA 330PF	1% 500V
				C29	1-123-332-00	ELECT 47MF	20% 16V
				C30	1-109-678-00	MICA 160PF	1% 500V
*4-353-708-00	HOOK, FINGER						(BVM-1415P ONLY)
					1-109-676-00	MICA 130PF	1% 500V
							(BVM-1415PM ONLY)
				C31	1-102-515-00	CERAMIC 24PF	5% 50V
				C32	1-109-685-00	MICA 330PF	1% 500V
				C33	1-101-004-00	CERAMIC 0.01MF	50V
				C34	1-136-153-00	FILM 0.01MF	5% 50V
				C35	1-101-004-00	CERAMIC 0.01MF	50V
				C36	1-123-379-00	ELECT 0.47MF	20% 50V
				C37	1-101-004-00	CERAMIC 0.01MF	50V
				C38	1-123-382-00	ELECT 3.3MF	20% 50V
				C39	1-109-667-11	MICA 56PF	1% 500V
				C40	1-102-942-00	CERAMIC 5PF	0.5PF 50V
				C41	1-109-681-11	MICA 220PF	1% 500V
				C43	1-123-332-00	ELECT 47MF	20% 16V
				C44	1-123-332-00	ELECT 47MF	20% 16V
				C45	1-101-004-00	CERAMIC 0.01MF	50V
				C46	1-136-153-00	FILM 0.01MF	5% 50V
				C49	1-123-379-00	ELECT 0.47MF	20% 50V
				C50	1-123-382-00	ELECT 3.3MF	20% 50V
				C51	1-109-667-11	MICA 56PF	1% 500V
				C52	1-102-942-00	CERAMIC 5PF	0.5PF 50V
				C53	1-109-681-11	MICA 220PF	1% 500V
				C55	1-123-332-00	ELECT 47MF	20% 16V
				C56	1-123-332-00	ELECT 47MF	20% 16V
				C57	1-101-004-00	CERAMIC 0.01MF	50V
				C58	1-101-004-00	CERAMIC 0.01MF	50V
				C59	1-101-004-00	CERAMIC 0.01MF	50V
				C60	1-123-332-00	ELECT 47MF	20% 16V
				C62	1-102-515-00	CERAMIC 24PF	5% 50V
							(BVM-1415P ONLY)
				C63	1-101-884-00	CERAMIC 56PF	5% 50V
				C64	1-101-884-00	CERAMIC 56PF	5% 50V
				C65	1-102-951-00	CERAMIC 15PF	5% 50V
				C66	1-102-965-00	CERAMIC 39PF	5% 50V
				C67	1-102-935-00	CERAMIC 2PF	0.25PF 50V
				C68	1-124-963-11	ELECT 33MF	20% 16V
				C69	1-124-963-11	ELECT 33MF	20% 16V
				C70	1-123-369-00	ELECT 4.7MF	20% 50V
				C71	1-101-004-00	CERAMIC 0.01MF	50V
				C75	1-101-004-00	CERAMIC 0.01MF	50V
				C80	1-123-611-00	ELECT 1MF	20% 50V
							(BVM-1415PM ONLY)
				C100	1-124-963-11	ELECT 33MF	20% 16V
				C101	1-123-332-00	ELECT 47MF	20% 25V
				C102	1-124-963-11	ELECT 33MF	20% 16V
				C103	1-124-963-11	ELECT 33MF	20% 16V
				C104	1-124-963-11	ELECT 33MF	20% 16V
				C106	1-124-963-11	ELECT 33MF	20% 16V
				C107	1-124-963-11	ELECT 33MF	20% 16V
				C108	1-124-963-11	ELECT 33MF	20% 16V
				C109	1-124-963-11	ELECT 33MF	20% 16V
				C110	1-124-963-11	ELECT 33MF	20% 16V
				C111	1-124-963-11	ELECT 33MF	20% 16V
				C112	1-124-119-00	ELECT 330MF	20% 16V
				C113	1-123-318-00	ELECT 33MF	20% 16V
							(BVM-1415P ONLY)
				C114	1-124-963-11	ELECT 33MF	20% 16V
				C115	1-124-963-11	ELECT 33MF	20% 16V
				C121	1-101-004-00	CERAMIC 0.01MF	50V
				C122	1-101-004-00	CERAMIC 0.01MF	50V
				C123	1-101-004-00	CERAMIC 0.01MF	50V
				C124	1-101-004-00	CERAMIC 0.01MF	50V

7. ELECTRICAL PARTS LIST

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C125	1-101-004-00	CERAMIC	0.01MF			COIL	
C126	1-101-004-00	CERAMIC	0.01MF				
C200	1-124-963-11	ELECT	33MF	20%	16V		
C201	1-123-332-00	ELECT	47MF	20%	25V		
C202	1-124-963-11	ELECT	33MF	20%	16V		
C203	1-124-963-11	ELECT	33MF	20%	16V		
C204	1-101-004-00	CERAMIC	0.01MF		50V		
C220	1-101-004-00	CERAMIC	0.01MF		50V		
C221	1-101-004-00	CERAMIC	0.01MF		50V		
C222	1-101-004-00	CERAMIC	0.01MF		50V		
C224	1-101-004-00	CERAMIC	0.01MF		50V		
C225	1-101-004-00	CERAMIC	0.01MF		50V		
C226	1-101-004-00	CERAMIC	0.01MF		50V		
C227	1-123-330-00	ELECT	22MF	20%	25V		
C250	1-124-963-11	ELECT	33MF	20%	16V		
C251	1-101-004-00	CERAMIC	0.01MF		50V		
C301	1-101-004-00	CERAMIC	0.01MF		50V		
C302	1-101-004-00	CERAMIC	0.01MF		50V		
C303	1-101-004-00	CERAMIC	0.01MF		50V		
C304	1-102-947-00	CERAMIC	10PF	0.5PF	50V		
					(BVM-1415P ONLY)		
C312	1-101-004-00	CERAMIC	0.01MF		50V		
C313	1-101-004-00	CERAMIC	0.01MF		50V		
C316	1-102-935-00	CERAMIC	2PF	0.25PF	50V		
					(BVM-1415P ONLY)		
	1-102-947-00	CERAMIC	10PF	0.5PF	50V		
					(BVM-1415PM ONLY)		
C350	1-102-877-00	CERAMIC	33PF	5%	50V		
					(BVM-1415P ONLY)		
	1-102-959-00	CERAMIC	22PF	5%	50V		
					(BVM-1415PM ONLY)		
TRIMMER							
CV1	1-141-147-XX	CAP, TRIMMER					
CV2	1-141-138-XX	CAP, TRIMMER, 5PF-8PF					
DIODE							
D1	8-719-911-19	DIODE 1SS119					
D2	8-719-911-19	DIODE 1SS119					
D4	8-719-100-15	DIODE RD3.0E-B2					
D5	8-719-100-54	DIODE RD9.1E-B2					
D6	8-719-911-19	DIODE 1SS119					
D10	8-712-500-00	DIODE 1T25					
D11	8-719-911-19	DIODE 1SS119					
D12	8-719-100-65	DIODE RD12E-B2					
D13	8-719-100-65	DIODE RD12E-B2					
D15	8-719-911-19	DIODE 1SS119 (BVM-1415PM ONLY)					
D16	8-719-911-19	DIODE 1SS119					
D201	8-719-911-19	DIODE 1SS119					
D202	8-719-911-19	DIODE 1SS119					
IC							
IC1	8-759-204-21	IC TA7193P					
IC2	8-759-800-81	IC LA7016					
IC3	8-759-201-69	IC TL8608P					
IC4	*1-526-654-00	SOCKET, IC (DP) 16P; IC3					
	8-759-201-69	IC TL8608P					
	*1-526-654-00	SOCKET, IC (DP) 16P; IC4					
IC5	8-759-140-53	IC UPD4053BC					
IC6	8-759-800-81	IC LA7016					
IC7	8-759-145-58	IC UPC4558C					
IC8	8-759-145-58	IC UPC4558C					
L1	1-408-533-00	COIL, VARIABLE					
L2	1-408-532-00	COIL (VARIABLE) (BVM-1415P ONLY)					
	1-408-514-00	COIL (VARIABLE) (BVM-1415PM ONLY)					
L3	1-408-514-00	COIL (VARIABLE) (BVM-1415P ONLY)					
	1-408-533-00	COIL, VARIABLE (BVM-1415PM ONLY)					
L4	1-408-421-00	INDUCTOR			100UH		
L5	1-408-429-00	INDUCTOR			470UH		
L6	1-408-429-00	INDUCTOR			470UH		
L8	1-408-421-00	INDUCTOR			100UH		
L101	1-408-421-00	INDUCTOR			100UH		
L102	1-408-421-00	INDUCTOR			100UH		
TRANSISTOR							
Q1	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q2	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q3	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q4	8-729-800-10	TRANSISTOR 2SC3068					
Q5	8-729-800-10	TRANSISTOR 2SC3068					
Q6	8-729-384-48	TRANSISTOR 2SA844					
Q7	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q8	8-729-384-48	TRANSISTOR 2SA844					
Q9	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q10	8-729-117-54	TRANSISTOR 2SA1175 (BVM-1415P ONLY)					
	8-729-384-48	TRANSISTOR 2SA844 (BVM-1415PM ONLY)					
Q11	8-729-117-54	TRANSISTOR 2SA1175 (BVM-1415P ONLY)					
	8-729-384-48	TRANSISTOR 2SA844 (BVM-1415PM ONLY)					
Q12	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q13	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q14	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q15	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q16	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q17	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q18	8-729-601-47	TRANSISTOR 2SK381-B					
Q20	8-729-117-54	TRANSISTOR 2SA1175 (BVM-1415P ONLY)					
	8-729-384-48	TRANSISTOR 2SA844 (BVM-1415PM ONLY)					
Q21	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q22	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q23	8-729-384-48	TRANSISTOR 2SA844					
Q24	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q25	8-729-800-10	TRANSISTOR 2SC3068					
Q26	8-729-601-47	TRANSISTOR 2SK381-B					
Q28	8-729-117-54	TRANSISTOR 2SA1175 (BVM-1415P ONLY)					
	8-729-384-48	TRANSISTOR 2SA844 (BVM-1415PM ONLY)					
Q29	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q30	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q31	8-729-384-48	TRANSISTOR 2SA844					
Q32	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q33	8-729-800-10	TRANSISTOR 2SC3068					
Q34	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q35	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q36	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q38	8-729-600-24	TRANSISTOR 2SC403SP-51					
Q101	8-729-103-43	TRANSISTOR 2SB734					
Q102	8-729-378-91	TRANSISTOR 2SD789					
Q103	8-729-900-63	TRANSISTOR DTA124ES					
Q104	8-729-900-63	TRANSISTOR DTA124ES					
RESISTOR							
R1	1-249-428-11	CARBON	8.2K	5%	1/4W		
R2	1-249-429-11	CARBON	10K	5%	1/4W		
R3	1-249-422-11	CARBON	2.7K	5%	1/4W		
R4	1-215-425-00	METAL	1.5K	1%	1/6W		
							(BVM-1415P ONLY)
	1-215-421-00	METAL	1K	1%	1/6W		
							(BVM-1415PM ONLY)
R5	1-215-395-00	METAL	82	1%	1/6W		
							(BVM-1415P ONLY)
	1-215-398-00	METAL	110	1%	1/6W		
							(BVM-1415PM ONLY)

BD


BM


7. ELECTRICAL PARTS LIST

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R6	1-215-421-00	METAL	1K 1% 1/6W	R41	1-215-429-00	METAL	2.2K 1% 1/6W
R7	1-215-421-00	METAL	1K 1% 1/6W				(BVM-1415P ONLY)
R8	1-215-423-00	METAL	1.2K 1% 1/6W		1-249-421-11	CARBON	2.2K 5% 1/4W
	1-215-427-00	METAL	1.8K 1% 1/6W				(BVM-1415PM ONLY)
			(BVM-1415P ONLY)	R42	1-215-445-00	METAL	10K 1% 1/6W
R9	1-215-421-00	METAL	1K 1% 1/6W		1-249-429-11	CARBON	10K 5% 1/4W
R10	1-215-421-00	METAL	1K 1% 1/6W				(BVM-1415PM ONLY)
R11	1-215-391-00	METAL	56 1% 1/6W	R43	1-215-421-00	METAL	1K 1% 1/6W
	1-215-400-00	METAL	130 1% 1/6W				(BVM-1415P ONLY)
			(BVM-1415PM ONLY)		1-249-417-11	CARBON	1K 5% 1/4W
R12	1-215-427-00	METAL	1.8K 1% 1/6W				(BVM-1415PM ONLY)
	1-215-429-00	METAL	2.2K 1% 1/6W	R44	1-249-433-11	CARBON	22K 5% 1/4W
			(BVM-1415PM ONLY)	R45	1-249-429-11	CARBON	10K 5% 1/4W
R13	1-249-425-11	CARBON	4.7K 5% 1/4W	R46	1-249-429-11	CARBON	10K 5% 1/4W
R14	1-249-429-11	CARBON	10K 5% 1/4W	R47	1-249-441-11	CARBON	100K 5% 1/4W
R15	1-249-429-11	CARBON	10K 5% 1/4W	R48	1-249-425-11	CARBON	4.7K 5% 1/4W
R17	1-249-433-11	CARBON	22K 5% 1/4W	R54	1-249-422-11	CARBON	2.7K 5% 1/4W
R18	1-215-425-00	METAL	1.5K 1% 1/6W	R55	1-215-418-00	METAL	750 1% 1/6W
R19	1-215-425-00	METAL	1.5K 1% 1/6W				(BVM-1415P ONLY)
R20	1-215-425-00	METAL	1.5K 1% 1/6W		1-215-420-00	METAL	910 1% 1/6W
R21	1-215-425-00	METAL	1.5K 1% 1/6W				(BVM-1415PM ONLY)
R22	1-249-405-11	CARBON	100 5% 1/4W	R56	1-215-420-00	METAL	910 1% 1/6W
R23	1-215-441-00	METAL	6.8K 1% 1/6W	R57	1-249-415-11	CARBON	680 5% 1/4W
	1-215-439-00	METAL	5.6K 1% 1/6W	R58	1-249-422-11	CARBON	2.7K 5% 1/4W
			(BVM-1415P ONLY)	R59	1-249-422-11	CARBON	2.7K 5% 1/4W
			(BVM-1415PM ONLY)	R60	1-215-418-00	METAL	750 1% 1/6W
R24	1-215-469-00	METAL	100K 1% 1/6W		1-215-420-00	METAL	910 1% 1/6W
R25	1-249-427-11	CARBON	6.8K 5% 1/4W				(BVM-1415PM ONLY)
	1-249-425-11	CARBON	4.7K 5% 1/4W	R61	1-215-420-00	METAL	910 1% 1/6W
			(BVM-1415P ONLY)	R62	1-249-415-11	CARBON	680 5% 1/4W
			(BVM-1415PM ONLY)	R63	1-249-422-11	CARBON	2.7K 5% 1/4W
R26	1-249-415-11	CARBON	680 5% 1/4W	R64	1-215-477-00	METAL	220K 1% 1/6W
	1-249-418-11	CARBON	1.2K 5% 1/4W		1-249-417-11	CARBON	1K 5% 1/4W
			(BVM-1415PM ONLY)				(BVM-1415PM ONLY)
R27	1-249-415-11	CARBON	680 5% 1/4W	R65	1-215-435-00	METAL	3.9K 1% 1/6W
R28	1-249-420-11	CARBON	1.8K 5% 1/4W		1-215-429-00	METAL	2.2K 1% 1/6W
	1-249-423-11	CARBON	3.3K 5% 1/4W				(BVM-1415PM ONLY)
			(BVM-1415PM ONLY)	R66	1-249-405-11	CARBON	100 5% 1/4W
R29	1-249-422-11	CARBON	2.7K 5% 1/4W	R70	1-247-903-00	CARBON	1M 5% 1/4W
R30	1-249-405-11	CARBON	100 5% 1/4W	R71	1-249-429-11	CARBON	10K 5% 1/4W
R31	1-247-903-00	CARBON	1M 5% 1/4W	R72	1-249-429-11	CARBON	10K 5% 1/4W
R32	1-249-429-11	CARBON	10K 5% 1/4W	R73	1-249-429-11	CARBON	10K 5% 1/4W
R34	1-215-407-00	METAL	270 1% 1/6W	R74	1-249-417-11	CARBON	1K 5% 1/4W
			(BVM-1415P ONLY)	R75	1-249-427-11	CARBON	6.8K 5% 1/4W
	1-215-417-00	METAL	680 1% 1/6W	R76	1-249-427-11	CARBON	6.8K 5% 1/4W
			(BVM-1415PM ONLY)	R77	1-249-425-11	CARBON	4.7K 5% 1/4W
R35	1-215-407-00	METAL	270 1% 1/6W	R78	1-215-424-00	METAL	1.3K 1% 1/6W
	1-215-417-00	METAL	680 1% 1/6W	R79	1-215-419-00	METAL	820 1% 1/6W
			(BVM-1415PM ONLY)	R80	1-215-425-00	METAL	1.5K 1% 1/6W
R36	1-215-413-00	METAL	470 1% 1/6W	R81	1-249-422-11	CARBON	2.7K 5% 1/4W
R37	1-215-443-00	METAL	8.2K 1% 1/6W	R82	1-249-425-11	CARBON	4.7K 5% 1/4W
R38	1-249-441-11	CARBON	100K 5% 1/4W	R83	1-249-435-11	CARBON	33K 5% 1/4W
R39	1-215-425-00	METAL	1.5K 1% 1/6W	R84	1-249-435-11	CARBON	33K 5% 1/4W
	1-215-429-00	METAL	2.2K 1% 1/6W	R85	1-215-903-00	CARBON	1M 5% 1/4W
			(BVM-1415P ONLY)	R86	1-249-429-11	CARBON	10K 5% 1/4W
			(BVM-1415PM ONLY)	R87	1-249-429-11	CARBON	10K 5% 1/4W
R40	1-215-421-00	METAL	1K 1% 1/6W	R88	1-249-429-11	CARBON	10K 5% 1/4W
	1-249-417-11	CARBON	1K 5% 1/4W	R89	1-249-417-11	CARBON	1K 5% 1/4W
			(BVM-1415PM ONLY)	R90	1-249-427-11	CARBON	6.8K 5% 1/4W
				R91	1-249-427-11	CARBON	6.8K 5% 1/4W
				R92	1-249-425-11	CARBON	4.7K 5% 1/4W
				R93	1-215-424-00	METAL	1.3K 1% 1/6W

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R94	1-215-419-00	METAL	820 1% 1/6W	VARIABLE RESISTOR			
R95	1-215-425-00	METAL	1.5K 1% 1/6W	RV1	1-237-515-21	RES, ADJ, CERMET 1K	
R96	1-249-422-11	CARBON	2.7K 5% 1/4W	RV2	1-237-499-21	RES, ADJ, CERMET 500	
R97	1-249-425-11	CARBON	4.7K 5% 1/4W	RV3	1-237-501-21	RES, ADJ, CERMET 2K	
R98	1-249-435-11	CARBON	33K 5% 1/4W	RV4	1-237-501-21	RES, ADJ, CERMET 2K	
R99	1-249-435-11	CARBON	33K 5% 1/4W	RV5	1-237-517-21	RES, ADJ, CERMET 5K	
R100	1-215-438-00	METAL	5.1K 1% 1/6W	RV6	1-237-517-21	RES, ADJ, CERMET 5K	
R101	1-215-438-00	METAL	5.1K 1% 1/6W	RV7	1-237-504-21	RES, ADJ, CERMET 20K	
R102	1-215-438-00	METAL	5.1K 1% 1/6W	RV8	1-237-504-21	RES, ADJ, CERMET 20K	
R103	1-215-438-00	METAL	5.1K 1% 1/6W	RV9	1-237-517-21	RES, ADJ, CERMET 5K	
R104	1-249-437-11	CARBON	47K 5% 1/4W	RV10	1-237-517-21	RES, ADJ, CERMET 5K	
R105	1-249-438-11	CARBON	56K 5% 1/4W	THERMISTOR			
R106	1-249-417-11	CARBON	1K 5% 1/4W	TH1	1-800-202-XX	THERMISTOR S-10K (BVM-1415PM ONLY)	
R107	1-249-417-11	CARBON	1K 5% 1/4W	CRYSTAL			
R108	1-249-417-11	CARBON	1K 5% 1/4W	X1	1-567-504-11	OSCILLATOR, CRYSTAL (BVM-1415P ONLY)	
R109	1-249-417-11	CARBON	1K 5% 1/4W		1-527-825-00	VIBRATOR, CRYSTAL (BVM-1415PM ONLY)	
R110	1-249-417-11	CARBON	1K 5% 1/4W	X2	1-567-409-11	VIBRATOR, CRYSTAL (BVM-1415P ONLY)	
R115	1-215-438-00	METAL	5.1K 1% 1/6W (BVM-1415P ONLY)		1-567-416-11	VIBRATOR, CRYSTAL (BVM-1415PM ONLY)	
	1-215-429-00	METAL	2.2K 1% 1/6W (BVM-1415PM ONLY)	*****			
R116	1-215-438-00	METAL	5.1K 1% 1/6W (BVM-1415P ONLY)	*A-1316-090-A	GA BOARD, COMPLETE (BVM-1415P ONLY)		
	1-215-429-00	METAL	2.2K 1% 1/6W (BVM-1415PM ONLY)	*****			
R120	1-249-429-11	CARBON	10K 5% 1/4W	*A-1316-048-A	GA BOARD, COMPLETE (BVM-1415PM ONLY)		
R121	1-249-429-11	CARBON	10K 5% 1/4W	*****			
R130	1-215-477-00	METAL	220K 1% 1/6W (BVM-1415P ONLY)	*2-990-241-01	HOLDER (A) PLUG		
	1-215-485-00	METAL	470K 1% 1/6W (BVM-1415PM ONLY)	*3-337-402-01	BAND, BINDING		
R150	1-249-441-11	CARBON	100K 5% 1/4W	*4-347-706-00	HEAT SINK (TR)		
R201	1-249-423-11	CARBON	3.3K 5% 1/4W	*4-371-803-01	COVER, FUSE HOLDER		
R202	1-249-423-11	CARBON	3.3K 5% 1/4W	*4-371-879-02	COVER, AC SELECT		
R203	1-249-422-11	CARBON	2.7K 5% 1/4W	4-379-403-01	SPACER (G1), POLISHING		
R204	1-249-423-11	CARBON	3.3K 5% 1/4W	*4-379-408-01	INSULATOR (G3)		
R220	1-249-441-11	CARBON	100K 5% 1/4W	*4-379-409-01	NUT, PLATE		
R221	1-249-433-11	CARBON	22K 5% 1/4W	4-379-410-01	SPACER (G2), POLISHING		
R222	1-249-433-11	CARBON	22K 5% 1/4W	*4-379-430-01	PANEL, POWER		
R250	1-215-415-00	METAL	560 1% 1/6W	*4-386-847-01	HEAT SINK (S.R.T)		
R251	1-215-415-00	METAL	560 1% 1/6W	*4-386-848-01	BAND (S.R.T)		
R252	1-215-421-00	METAL	1K 1% 1/6W	4-601-466-11	COVER, 3P INLET		
R254	1-249-429-11	CARBON	10K 5% 1/4W	CAPACITOR			
R255	1-249-441-11	CARBON	100K 5% 1/4W	C1	1-124-024-00	ELECT	4.7MF 20% 350V
R259	1-215-421-00	METAL	1K 1% 1/6W	C2	1-124-024-00	ELECT	4.7MF 20% 350V
R301	1-215-469-00	METAL	100K 1% 1/6W	C3	1-162-117-00	CERAMIC	100PF 10% 500V
R302	1-215-491-00	METAL	820K 1% 1/6W	C4	1-162-117-00	CERAMIC	100PF 10% 500V
R303	1-249-418-11	CARBON	1.2K 5% 1/4W	C5	1-162-117-00	CERAMIC	100PF 10% 500V
R305	1-249-431-11	CARBON	15K 5% 1/4W	C6	1-162-117-00	CERAMIC	100PF 10% 500V
R306	1-249-428-11	CARBON	8.2K 5% 1/4W	C7	1-124-128-00	ELECT	470MF 20% 25V
R307	1-249-417-11	CARBON	1K 5% 1/4W	C8	1-124-525-11	ELECT	1000MF 20% 25V
R308	1-249-417-11	CARBON	1K 5% 1/4W	C9	1-124-128-00	ELECT	470MF 20% 25V
R309	1-249-393-11	CARBON	10 5% 1/4W (BVM-1415P ONLY)	C10	1-124-525-11	ELECT	1000MF 20% 25V
R310	1-249-422-11	CARBON	2.7K 5% 1/4W	C11	1-124-128-00	ELECT	470MF 20% 25V
R314	1-215-417-00	METAL	680 1% 1/6W	C12	1-124-129-00	ELECT	2200MF 20% 25V
R315	1-249-422-11	CARBON	2.7K 5% 1/4W	C13	1-124-128-00	ELECT	470MF 20% 25V
R316	1-249-413-11	CARBON	470 5% 1/4W	C14	1-124-129-00	ELECT	2200MF 20% 25V
R317	1-249-413-11	CARBON	470 5% 1/4W	C15	1-123-985-51	ELECT	1000MF 20% 16V
R320	1-215-472-00	METAL	130K 1% 1/6W (BVM-1415P ONLY)	C16	1-123-874-00	ELECT	470MF 20% 16V
	1-215-482-00	METAL	360K 1% 1/6W (BVM-1415PM ONLY)	C17	1-106-375-12	MYLAR	0.022MF 10% 100V
R353	1-249-432-11	CARBON	18K 5% 1/4W	C18	1-108-638-11	MYLAR	0.1MF 10% 100V
R354	1-249-432-11	CARBON	18K 5% 1/4W	C19	1-102-030-00	CERAMIC	330PF 10% 500V
R400	1-215-429-00	METAL	2.2K 1% 1/6W	C20	1-162-117-00	CERAMIC	100PF 10% 500V
				C21	1-102-038-00	CERAMIC	0.001MF 500V
				C22	1-162-117-00	CERAMIC	100PF 10% 500V
				C23	1-106-375-12	MYLAR	0.022MF 10% 100V
				C24	1-108-638-11	MYLAR	0.1MF 10% 100V

GA

Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C25	1-123-380-00	ELECT	1MF	20%	50V		
C26	1-101-361-00	CERAMIC	150PF	5%	50V		
C27	1-101-361-00	CERAMIC	150PF	5%	50V		
C28	1-123-356-00	ELECT	10MF	20%	16V		
C29	1-123-332-00	ELECT	47MF	20%	25V		
C30	1-162-117-00	CERAMIC	100PF	10%	500V		
C31	1-102-030-00	CERAMIC	330PF	10%	500V		
C32	1-123-380-00	ELECT	1MF	20%	50V		
C33	1-101-361-00	CERAMIC	150PF	5%	50V		
C34	1-101-361-00	CERAMIC	150PF	5%	50V		
C35	1-123-380-00	ELECT	1MF	20%	50V		
C36	1-123-332-00	ELECT	47MF	20%	25V		
C37	1-130-734-00	FILM	0.0068MF	5%	50V		
C38	1-136-165-00	FILM	0.1MF	5%	50V		
C39	1-136-165-00	FILM	0.1MF	5%	50V		
C40	1-123-381-00	ELECT	2.2MF	20%	50V		
C41	1-102-038-00	CERAMIC	0.001MF		500V		
C42	1-136-165-00	FILM	0.1MF	5%	50V		
C43	1-106-375-12	MYLAR	0.022MF	10%	100V		
C44	1-123-356-00	ELECT	10MF	20%	16V		
C45	1-162-132-00	CERAMIC	270PF	10%	2KV		
C46	1-123-356-00	ELECT	10MF	20%	16V		
C47	1-136-173-00	FILM	0.47MF	5%	50V		
C48	1-136-173-00	FILM	0.47MF	5%	50V		
C49	1-123-356-00	ELECT	10MF	20%	16V		
C50	1-101-006-00	CERAMIC	0.047MF		50V		
C51	1-101-006-00	CERAMIC	0.047MF		50V		
C52	1-101-006-00	CERAMIC	0.047MF		50V		
C53	1-101-006-00	CERAMIC	0.047MF		50V		
C54	1-101-006-00	CERAMIC	0.047MF		50V		
C55	1-123-356-00	ELECT	10MF	20%	16V		
C56	1-130-808-00	FILM	0.22MF	5%	400V		
C57	1-123-356-00	ELECT	10MF	20%	25V		
C58	1-123-379-00	ELECT	0.47MF	20%	50V		
C59	1-130-734-00	FILM	0.0068MF	5%	50V		
C60	1-102-228-00	CERAMIC	470PF	10%	500V		
C61	1-102-228-00	CERAMIC	470PF	10%	500V		
C62	1-102-228-00	CERAMIC	470PF	10%	500V		
C63	1-102-228-00	CERAMIC	470PF	10%	500V		
C64	1-124-024-00	ELECT	4.7MF	20%	350V		
C65	1-124-024-00	ELECT	4.7MF	20%	350V		
C66	1-162-117-00	CERAMIC	100PF	10%	500V		
C67	1-162-117-00	CERAMIC	100PF	10%	500V		
C68	1-162-117-00	CERAMIC	100PF	10%	500V		
C69	1-124-562-11	ELECT	47MF	20%	200V		
C70	1-124-805-51	ELECT	100MF	20%	160V		
C71	1-162-117-00	CERAMIC	100PF	10%	500V		
C72	1-124-562-11	ELECT	47MF	20%	200V		
C73	1-124-805-51	ELECT	100MF	20%	160V		
C74	1-123-333-00	ELECT	100MF	20%	16V		
C75	1-123-333-00	ELECT	100MF	20%	16V		
C76	Δ 1-161-953-51	CERAMIC	0.0047MF	20%	400V		
C77	Δ 1-161-953-51	CERAMIC	0.0047MF	20%	400V		
C78	1-162-599-12	CERAMIC	0.0047MF	20%	400V		
C79	1-162-599-12	CERAMIC	0.0047MF	20%	400V		
C80	1-125-295-00	ELECT(BLOCK)	560MF	20%	200V		
C81	1-125-295-00	ELECT(BLOCK)	560MF	20%	200V		
C82	1-123-369-00	ELECT	4.7MF	20%	25V		



The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- The components identified by  $\Delta$  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

GA

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
L8	1-459-644-11	COIL, CHOKE 2.9MMH		R38	1-249-429-11	CARBON 10K 5% 1/4W	
L9	1-459-645-11	COIL, CHOKE 20MMH		R39	1-249-413-11	CARBON 470 5% 1/4W	
L10	1-421-329-00	COIL, CHOKE		R40	1-215-453-00	METAL 22K 1% 1/6W	
L11	1-421-329-00	COIL, CHOKE		R41	1-249-425-11	CARBON 4.7K 5% 1/4W	
L12	1-421-329-00	COIL, CHOKE		R42	1-215-437-00	METAL 4.7K 1% 1/6W	
L13	1-421-329-00	COIL, CHOKE		R43	1-215-435-00	METAL 3.9K 1% 1/6W	
L14	1-421-329-00	COIL, CHOKE		R44	1-215-427-00	METAL 1.8K 1% 1/6W	
L15	1-421-329-00	COIL, CHOKE		R45	1-247-713-11	CARBON 1K 5% 1/4W	
L16	1-421-329-00	COIL, CHOKE		R46	1-249-417-11	CARBON 1K 5% 1/4W	
L17	$\Delta$ 1-421-556-21	TRANSFORMER, LINE FILTER (LFT)		R47	1-216-732-11	METAL 820 1% 10W	
L18	$\Delta$ 1-421-556-21	TRANSFORMER, LINE FILTER (LFT)		R48	1-215-866-11	METAL OXIDE 330 5% 1W F	
<u>TRANSISTOR</u>				R52	$\Delta$	METAL OXIDE 2W F	
Q1	8-729-301-76	TRANSISTOR STR8124-R		R53	$\Delta$	METAL 1/6W	
Q2	8-729-301-76	TRANSISTOR STR8124-R		R54	1-215-901-00	METAL OXIDE 33K 5% 2W F	
Q3	8-729-177-44	TRANSISTOR 2SD774-5		R55	1-215-426-00	METAL 1.6K 1% 1/6W	
Q4	8-729-177-44	TRANSISTOR 2SD774-5		R60	1-249-420-11	CARBON 1.8K 5% 1/4W	
Q5	8-729-177-44	TRANSISTOR 2SD774-5		R61	1-249-420-11	CARBON 1.8K 5% 1/4W	
Q6	8-729-177-44	TRANSISTOR 2SD774-5		R62	1-249-429-11	CARBON 10K 5% 1/4W	
Q7	8-729-103-43	TRANSISTOR 2SB734		R63	1-249-413-11	CARBON 470 5% 1/4W	
Q8	8-729-178-54	TRANSISTOR 2SC2785		R64	1-249-426-11	CARBON 5.6K 5% 1/4W	
Q9	8-729-178-54	TRANSISTOR 2SC2785		R65	1-215-437-00	METAL 4.7K 1% 1/6W	
Q10	8-729-313-42	TRANSISTOR 2SD1134		R66	1-215-453-00	METAL 22K 1% 1/6W	
Q11	8-729-600-60	TRANSISTOR 2SA1115P		R67	$\Delta$ 1-214-917-21	METAL 150K 1% 1/2W	
Q12	8-729-177-44	TRANSISTOR 2SD774-5		R68	$\Delta$ 1-215-437-91	METAL 4.7K 1% 1/6W	
Q13	8-729-178-54	TRANSISTOR 2SC2785		R74	1-215-889-00	METAL OXIDE 330 5% 2W F	
Q14	8-729-178-54	TRANSISTOR 2SC2785		R77	1-215-433-00	METAL 3.3K 1% 1/6W	
<u>RESISTOR</u>				R78	1-215-433-00	METAL 3.3K 1% 1/6W	
R1	1-215-857-11	METAL OXIDE 10 5% 1W F		R80	$\Delta$ 1-202-663-35	SOLID 5.6M 10% 1/2W	
R2	1-215-857-11	METAL OXIDE 10 5% 1W F		R81	1-215-461-00	METAL 47K 1% 1/6W	
R3	1-247-715-11	CARBON 1.5K 5% 1/4W		R82	1-215-461-00	METAL 47K 1% 1/6W	
R4	1-215-857-11	METAL OXIDE 10 5% 1W F		R83	1-215-461-00	METAL 47K 1% 1/6W	
R5	1-215-857-11	METAL OXIDE 10 5% 1W F		R84	1-215-459-00	METAL 39K 1% 1/6W	
R6	1-249-447-11	CARBON 1 5% 1/4W F		R85	1-215-449-00	METAL 15K 1% 1/6W	
R7	1-247-692-11	CARBON 22 5% 1/4W		R86	1-215-437-00	METAL 4.7K 1% 1/6W	
R8	1-249-418-11	CARBON 1.2K 5% 1/4W		R87	1-249-405-11	CARBON 100 5% 1/4W	
R9	1-249-382-11	CARBON 1.2 5% 1/4W F		R88	1-249-433-11	CARBON 22K 5% 1/4W	
R10	1-249-447-11	CARBON 1 5% 1/4W F		R89	1-249-429-11	CARBON 10K 5% 1/4W	
R11	1-247-692-11	CARBON 22 5% 1/4W		R90	1-249-429-11	CARBON 10K 5% 1/4W	
R12	1-249-418-11	CARBON 1.2K 5% 1/4W		R91	1-249-429-11	CARBON 10K 5% 1/4W	
R13	1-215-866-11	METAL OXIDE 330 5% 1W F		R92	$\Delta$ 1-217-295-11	WIREWOUND 5.6 10% 5W F	
R14	1-247-700-11	CARBON 100 5% 1/4W		R93	1-215-886-11	METAL OXIDE 100 5% 2W F	
R15	1-247-709-11	CARBON 510 5% 1/4W		R94	1-205-538-00	CEMENTED 4.7 10% 10W	
R16	1-247-709-11	CARBON 510 5% 1/4W		R95	1-215-904-11	METAL OXIDE 100K 5% 2W F	
R17	1-247-700-11	CARBON 100 5% 1/4W		R96	1-215-904-11	METAL OXIDE 100K 5% 2W F	
R18	1-249-425-11	CARBON 4.7K 5% 1/4W		R97	1-215-904-11	METAL OXIDE 100K 5% 2W F	
R19	1-249-419-11	CARBON 1.5K 5% 1/4W		R98	1-215-904-11	METAL OXIDE 100K 5% 2W F	
R20	1-247-838-00	CARBON 2K 5% 1/4W		<u>VARIABLE RESISTOR</u>			
R21	1-249-417-11	CARBON 1K 5% 1/4W		RV1	1-237-514-21	RES, ADJ, CERMET 500	
R22	1-249-409-11	CARBON 220 5% 1/4W		RV2	1-237-515-21	RES, ADJ, CERMET 1K	
R23	1-249-417-11	CARBON 1K 5% 1/4W		<u>RELAY</u>			
R24	1-249-421-11	CARBON 2.2K 5% 1/4W		RY1	$\Delta$ 1-515-491-11	RELAY (POWER)	
R25	1-249-409-11	CARBON 220 5% 1/4W		<u>TRANSFORMER</u>			
R26	1-247-700-11	CARBON 100 5% 1/4W		T1	$\Delta$ 1-448-433-11	TRANSFORMER, CONVERTER (S.R.T)	
R27	1-247-713-11	CARBON 1K 5% 1/4W		T2	$\Delta$ 1-447-106-11	TRANSFORMER, DRIVE	
R28	1-247-713-11	CARBON 1K 5% 1/4W		T3	$\Delta$ 1-421-624-12	TRANSFORMER, CURRENT	
R29	1-247-700-11	CARBON 100 5% 1/4W		T4	$\Delta$ 1-447-426-12	TRANSFORMER, CONVERTER	
R30	1-215-886-11	METAL OXIDE 100 5% 2W F		T5	$\Delta$ 1-448-432-12	TRANSFORMER, CONVERTER (S.R.T)	
R31	1-215-886-11	METAL OXIDE 100 5% 2W F		T6	$\Delta$ 1-447-106-11	TRANSFORMER, DRIVE	
R32	1-215-886-11	METAL OXIDE 100 5% 2W F		T7	$\Delta$ 1-421-624-12	TRANSFORMER, CURRENT	
R33	1-247-697-11	CARBON 56 5% 1/4W F		<u>THERMISTOR</u>			
R34	1-247-697-11	CARBON 56 5% 1/4W F		TH1	$\Delta$ 1-800-820-12	THERMISTOR, POWER	
R35	1-215-863-11	METAL OXIDE 100 5% 1W F		THP1	$\Delta$ 1-806-387-11	THERMISTOR (POSITIVE)	
R36	1-249-425-11	CARBON 4.7K 5% 1/4W		THP2	$\Delta$ 1-800-686-32	THERMISTOR (POSITIVE)	
R37	1-249-420-11	CARBON 1.8K 5% 1/4W					

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
MISCELLANEOUS *****							
	$\Delta$ 1-162-142-21	CAP. BLOCK, HIGH VOLTAGE					
	$\Delta$ 1-238-301-11	RESISTOR ASSY, HIGH-VOLTAGE					
	$\Delta$ 1-426-263-11	COIL, DEMAGNETIZATION					
	$\Delta$ 1-451-329-11	DEFLECTION YOKE (SY-222)					
	$\Delta$ 1-452-436-11	NECK ASSY, PICTURE TUBE (NA292)					
	$\Delta$ 1-509-546-11	3P INLET					
	$\Delta$ 1-532-203-11	FUSE, TIME-LAG 2A/250V (BVM-1415P ONLY)					
	$\Delta$ 1-532-746-11	FUSE, GLASS TUBE 4A/125V (BVM-1315, BVM-1415PM ONLY)					
	1-533-148-00	HOLDER, FUSE					
	$\Delta$ 1-554-913-11	SWITCH, SLIDE (VOLTAGE CHANGE)					
	1-565-791-11	CONNECTOR, BNC 1P					
D1	8-719-812-42	DIODE TLY124					
D2	8-719-812-41	DIODE TLR124					
S901	$\Delta$ 1-570-052-12	SWITCH, PUSH (AC POWER)(1 KEY)					
V901	$\Delta$ 8-734-521-05	PICTURE TUBE (M34KE21X) (BVM-1415P, BVM-1415PM ONLY)					
V901	$\Delta$ 8-734-721-05	PICTURE TUBE (M34KE20X) (BVM-1315 ONLY)					
*****							
ACCESSORIES AND PACKING MATERIALS *****							
Part No.	Description	Remark					
$\Delta$ 1-532-203-11	FUSE, TIME-LAG 2A/250V (BVM-1415P ONLY)						
$\Delta$ 1-532-746-11	FUSE, GLASS TUBE 4A/125V (BVM-1315, BVM-1415PM ONLY)						
$\Delta$ 1-534-819-14	POWER CORD (BVM-1415P ONLY)						
$\Delta$ 1-551-812-11	CORD, POWER (BVM-1315, BVM-1415PM ONLY)						
1-560-776-00	SOCKET, CONNECTOR 10P						
*1-627-687-11	Z BOARD						
*2-990-242-01	HOLDER (B), PLUG						
4-312-246-00	BAG, PROTECTION						
4-378-901-01	KEY						
*4-379-479-01	CUSHION (UPPER)						
*4-379-480-01	CUSHION (LOWER)						
4-391-204-01	MANUAL, OPERATION & MAINTENANCE						
4-391-208-01	LABEL, TALLY NUMBER						
*4-391-224-01	INDIVIDUAL CARTON (BVM-1415P, BVM-1415PM ONLY)						
*4-391-225-01	INDIVIDUAL CARTON (BVM-1315 ONLY)						
7-700-731-03	DRIVER, VR ADJUSTMENT						